LOFTWARE
ENTERPRISE LABELING SOLUTIONS

Loftware Label Manager

Version 10.1.1

User's Guide

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Loftware Label Manager is a suite of software applications for designing and printing barcode labels. Loftware's stand-alone printing modules, On-Demand and Range Print, can be used with Loftware Label Manager for non-automated/low-volume barcode label printing. New printer drivers are continually being added; please contact support@loftware.com for availability of new drivers for printers and RFID devices.

The Loftware Label Manager applications are included with all licensing models of the Loftware Print Server. The LPS includes the tools necessary for high volume / automated printing.

With the Loftware Label Manager, you can:

- Create barcode and RFID labels
- Set up and configure barcode and RFID devices
- Customize labels to meet compliance standards
- Use single and double byte character sets in your labels to support Korean, Japanese and other Asian languages
- Build MaxiCode, GS1-128 (Formerly UCC-128), TLC39, and QR Code barcodes
- Define data for RFID labels and tags using EPC or DoD encoding
- Print labels as needed using the On-Demand print module
- Extract label data from different sources, including ODBC 32 compliant databases
- Use wizards for many of the previously mentioned features

Loftware Documentation

Loftware Label Manager

The *Loftware Label Manager User's Guide* describes label creation and printing using Loftware Label Manager, including:

- Label design
- Barcodes
- Device Connections
- RFID Field Encoding, and Smart Label Printing
- On-Demand Printing
- Templates and Wizards
- Double-byte Character Sets

- Databases and ODBC
- Range Printing

Note: You must purchase and license the Loftware Print Server separately from the Loftware Label Manager.

Loftware.com

Visit www.loftware.com for the latest revisions of the Loftware Print Server and Loftware Label Manager user guides. Also, visit the Loftware Knowledge Base at www.loftware.com/help for additional information and tips on a variety of subjects.

Contact Loftware

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For consultation, implementation services, training or product optimization please contact Loftware's Professional Services Group.

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Technical Support

For installation and configuration questions, please contact Loftware's Technical Support department. Visit *www.loftware.com* for Loftware's technical support policies.

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Customer Service

For licensing, product information, and ordering questions, please contact Loftware's Customer Service department. Please have your Serial Number and Registration information available, so we can provide service to you quickly and efficiently.

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Fax +1.603.766.3631
E-mail customerservice@loftware.com

Technical Support

Software licenses purchased directly from Loftware include the first year of Technical Support. This initial 12-month support period starts on the day the product is shipped and invoiced from Loftware's factory. When needed, support recipients during this period are eligible to receive unlimited telephone support, access to software upgrades and enhancements and speak with our Systems Analysts.

Premium Annual Support Contract

To ensure uninterrupted telephone support as well as access to the latest software upgrades and enhancements, make sure all your software licenses remain under a Loftware Support Contract. After your first year of ownership, you will be sent a notice to renew your support contract. Please refer to Loftware's Web site for additional information about this very important topic, or if you prefer, call Loftware's Customer Service Department for more information.

During the one-year Support Contract period, Contract Subscribers have access to the following services:

1. Unlimited Technical Support Incidents
2. Access to Loftware's Professional Services Group
3. Automatically eligible to download software upgrades and service packs from our Web site
4. Automatic e-mail notification when new versions of software become available
5. When necessary, access to senior Loftware technical support staff, via phone and e-mail
6. Guaranteed software license replacement for accidentally damaged or malfunctioning hardware keys

Before Calling Support

Loftware has highly trained technicians available to help you with your labeling system. Technical support calls are not accepted until all of the following Technical Support requirements are met:

1. Your product is registered. If you have not registered your software, you may do so at *http://loftware.com* or via fax by using the form included with your software.
2. There is a Support Contract in place that covers the specific license in question.
3. You have checked the user's guide(s) for your answer. If you do not have the User's Guides, both of the guides can be downloaded in PDF format from our web site or read on-line. User manuals are also on the Loftware CD.
4. You have checked the Loftware's Knowledge Base articles on our http://loftware.com. Hundreds of frequently asked questions and typical problems are documented there in easy to read articles.
5. If you suspect that your problem is hardware related, try to first determine if it is a problem with your computer, Network, or printer and contact the appropriate company. Loftware does not sell or service any hardware products.

6. Have your serial number and version number of the product you are using ready. These numbers can be obtained by accessing the Help | About menu of the label design mode.
7. Think about how you are going to efficiently explain the problem prior to speaking with a technician. The better the description, the quicker the solution and/or resolution to your problem.
8. If this is a follow up call to a previous incident, please have the incident number ready.

Phone 603-766-3630 x402

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E-mail support@loftware.com

Licensing, Warranty, and Support

The following documents are available on the CD-ROM or Internet download of the Loftware Software:

- Loftware End User License Agreement
- Loftware Third Party Terms and Conditions
- Loftware Software Services Support Agreement

License Information and Registration

Checking License Information

1. Open Loftware Label Manager (Start | All Programs | Loftware Labeling | Design 32).
2. If you have a Hardware Key, verify that it is plugged in. Your license information is displayed in the bottom status panel of the Loftware Label Manager Design window. It can also be found in the Help | About menu.

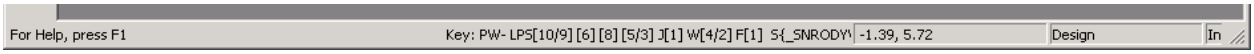


Figure 1.1: License Key in Status Bar

For Loftware Print Server Products

If you have purchased any of the Loftware Print Server products, LPS is displayed in the license string, along with the following information. An underscore (_) indicates a placeholder for options that are not turned on. The following table explains settings that may be found in a license string.

PW-LPS[10/9] [6] [8] [5/3] J[1] W[4/2] F[1] P{MSNRCBOYV}	
RL or PW	The installation type
LPS	32-bit Loftware Print Server key

PW-LPS[10/9] [6] [8] [5/3] J[1] W[4/2] F[1] P{MSNRCBOYV}	
[10/	The total number of printer seats
/9]	The number of the total seats that are RFID printer seats.
[6]	The number of Client connections allowed. This includes remote status client, ODP client, client integration, Loftware Connector.
[8]	The number of Terminal Server connections allowed.
[5/	The number of Oracle Connector client seats allowed.
/3]	The number of Loftware Connector for SAP client seats allowed.
J[3]	The number of Loftware Connector for Java client seats allowed.
W[1/	The number of Loftware WebServices seats allowed.
/50]	The number of Loftware WebAccess seats allowed
F[1]	The number of integrations with IBM FileNet.
P	A P indicates that the license is a Premier edition. An S indicates that this is a Starter or Standard LPS Edition. The Premier edition requires the following: - M, S, N, R, C settings, described in this table - At least 10 total device seats - At least 4 client seats
M	Multithreaded
S	Allows use of the Status Client application
N	Allows use of Notification Agent locally
R	Allows use of Notification Agent remotely
C	Allows use of clustering
B	Marks the 2nd key on the backup node of a cluster*
O	Allows Loftware Connector to log in*
Y	RFID functionality is enabled
V	Allows the use of the Loftware Enterprise Update Utility. (For use with the Loftware Connector for SAP Applications)
* These features run with, but must be purchased separately from, the Loftware Premier Edition.	

Loftware Label Manager Version 10.0

System Requirements

Consider these requirements the minimum to run the Loftware Label Manager. Medium and high-volume systems may require more or faster processors and higher available RAM and disk space in order to achieve desired performance and throughput. LLM will perform best when not limited by available RAM, disk space, or processor speed.

Component	Requirement
Computer Processor Speed	2.0 GHz Dual Core
Computer Memory (RAM)	2 GB; 4GB Recommended
Computer Hard Disk Space	Minimum 2GB Available Disk Space
Operating System	**Microsoft Operating Systems** Windows XP SP 3 (32-bit) Windows Vista SP 2 (32-bit) Windows 7 SP 1 (32-bit or 64-bit) Windows Server 2003 SP2 (32-bit or 64-bit) Windows Server 2008 SP 1 or later (32-bit or 64-bit) Windows Server 2008 R2 SP 1 (64-bit) **Note:** All Loftware products, controls, clients, and connectors run as 32-bit applications on 64-bit Windows operating systems.

Topics in this section include:

- Defining device connection and viewing device families
- Configuring devices for use with the Loftware Label Manager and Loftware Print Server products
- Understanding Device Status Responses
- Defining the device connection including port selection and communications settings
- Setting up Device Specific Options. For printers, this usually includes options for stock type, ribbon type, label handling, and cutter.
- Working with multiple devices and devices in a network
- Configuring printers with Windows Terminal Server

Device Connection Types

When choosing device connections for Loftware's native device drivers, you have the following options:

- Port
- Windows Sockets (TCP/IP)
- Print Manager/Spooling
- Web User

These sections describe each of these connection types and the considerations when using each of them. Your connection configuration depends on:

- Whether or not you have IP addressable printers
- Whether or not the devices are connected to a network
- How many devices you plan to drive
- Expected Status Response of the printers

Note: The Loftware Print Server typically uses TCP/IP connections.

Local Connection: Computer to Printer Port

When to use

Use this connection type if the printer is connected directly to the serial, parallel, or USB port of the computer on which the Loftware Label Manager or the Loftware Print Server (LPS) is running.

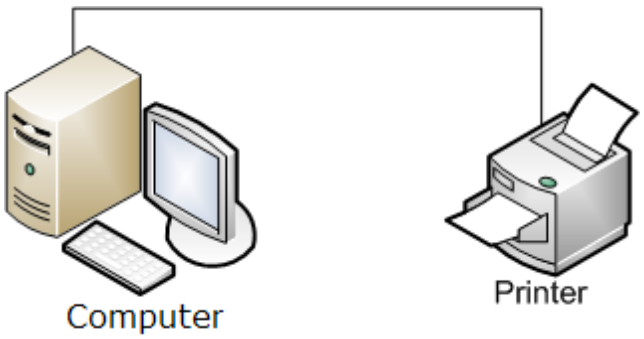


Figure 2.1: Local – Direct Connection: Computer to Printer

This connection is mainly used for stand-alone printing with Loftware Label Manager and with On-Demand Print. With this type of connection, the print engine maintains a communication session with the printer via a serial, parallel or USB port. If this is the connection your setup dictates, proceed to the Device Configuration section of this section.

Note: If you want to connect more than 2 printers, use Connection Type 2 or 3.

TCP/IP (Windows Sockets) Connection

When to use

Use TCP/IP if your printer is connected to a print server device or has a built-in network connection with a TCP/IP address. (See Figure 2.2.)

TCP/IP is the recommended method for network printing if your printer is TCP/IP Addressable. It is a very fast method for sending a print job directly to a printer via an IP Address/Raw Port Address. Typically, a printer is connected to a print server device that may have one or more serial, parallel, or USB ports. The Print Server has an IP Address assigned to it, and each port on the device has a Raw Port Address. Both addresses are required to configure the printer in Loftware Label Manager.

Note: Some printers have built-in Network Interface Cards (NIC) that eliminate the need for print servers. In this case, the TCP/IP address can be specified without a raw port.

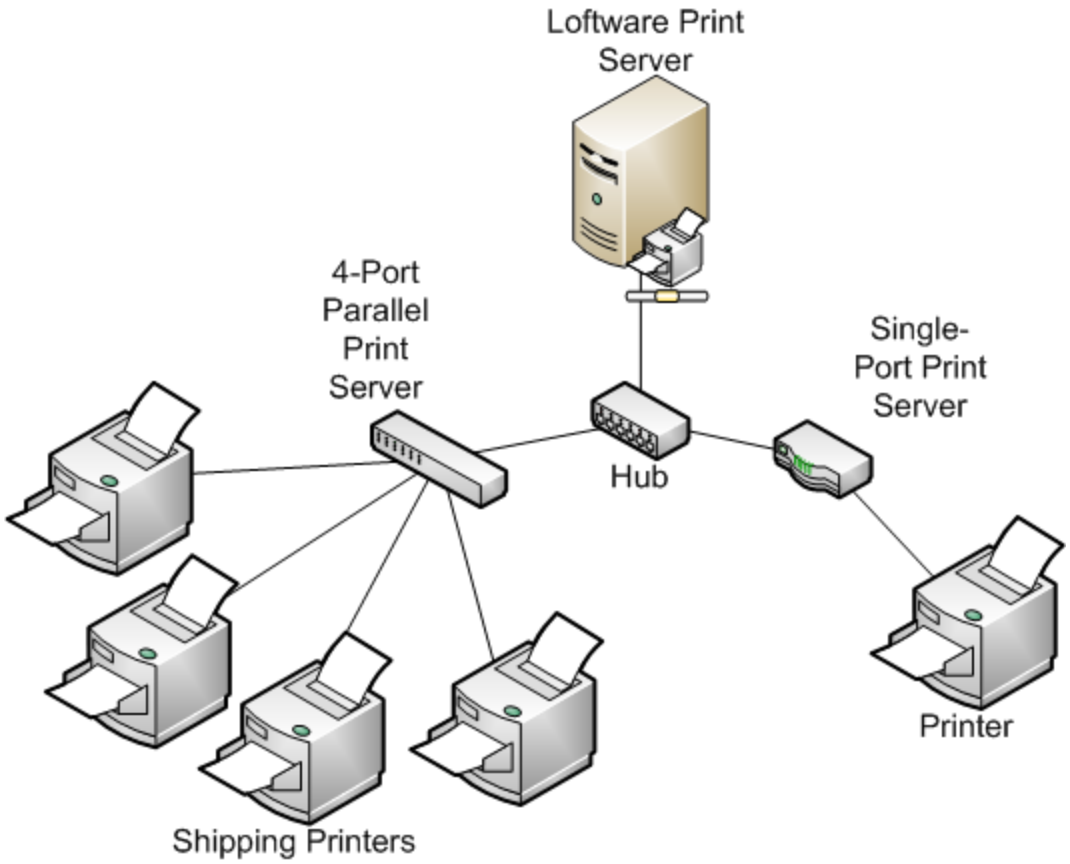


Figure 2.2: TCP/IP Connection

Print Manager/Spooling Connection

When to use

Use this option if the printer is connected directly to the serial, parallel, or USB port of a computer other than the one on which Loftware Label Manager or the Loftware Print Server (LPS) is running. If your printer is IP Addressable, use a TCP/IP Connection.

When this option is used, Loftware Label Manager queues print jobs to multiple printers via the Windows Print Manager instead of sending them directly to the printer. The print engine is occupied with the job only for as long as it takes to pass it to Print Manager, which is substantially faster than sending it to the printer via a serial, parallel, or USB connection. As soon as the job has been passed, the Operating System takes over the task of sending the job to the printer.

The Generic/Text Only printer driver is used as a pass-through driver. This means that the native printer language generated by Loftware is sent to the printer without modification. To implement Print Manager Spooling, install the Generic Text only driver, and then, in the LLM Device Configuration dialog box, choose the name of the driver that you installed.

In certain circumstances, it may be useful to use Print Manager/Spooling if the printer is connected directly to a local port or to a print server device on the network.

Example

You are printing through a USB port using the On-Demand Print Application and your label has large or complex graphics. Print Manager/Spooling returns user control to the application much faster than printing directly to the COM/LPT port.

Example 2

Another program under Windows takes control of the COM Port, preventing Loftware from accessing it directly. Using Print Manager/Spooling with a generic text driver resolves this.

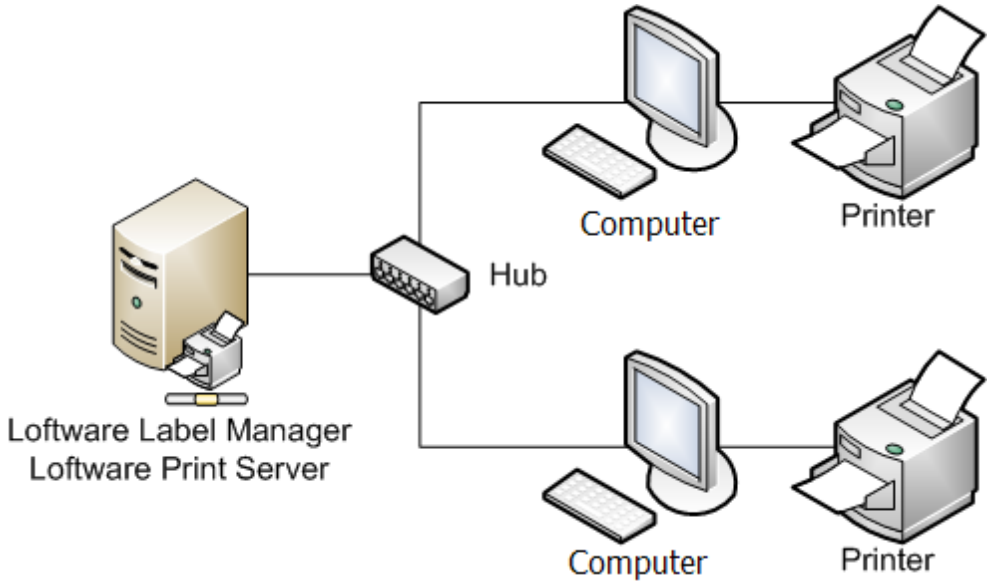


Figure 2.3: Print Manager Spooling Connection

Web User Connection

When to use

Use this option if the printer is connected to a Client PC, either directly to the serial, parallel, or USB port or via a shared network connection.

When this option is used, the printer connected to the client PC receives print jobs from the Loftware Print Server via an Internet Connection using the Web Client, Web Listener, or the ActiveX Internet Application.

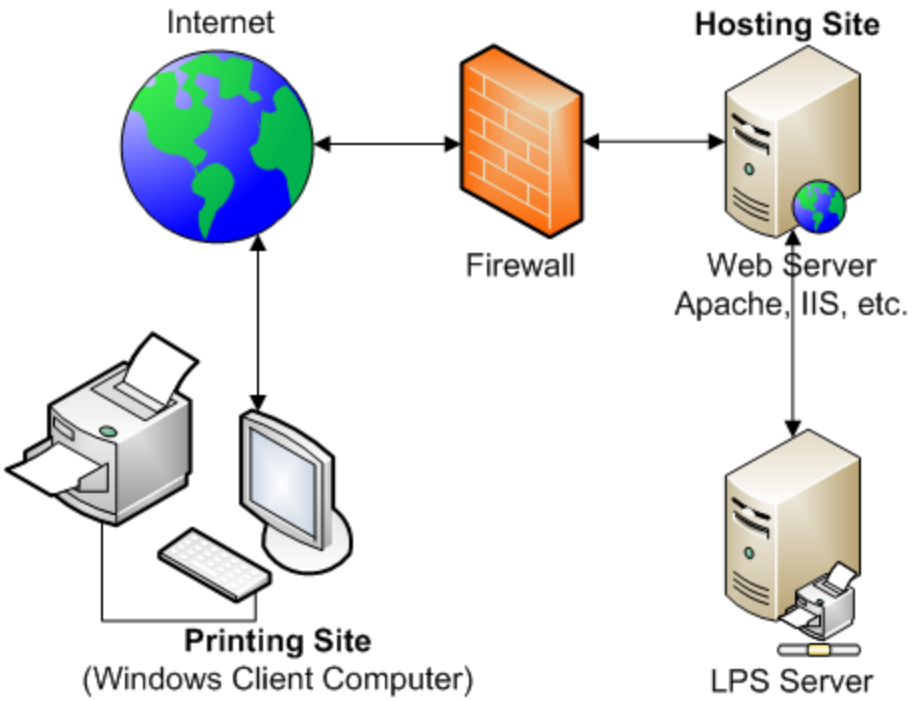


Figure 2.4: Connection Type 4, Web User

Device Connection Summary

Once the type of connection has been decided, the next step is to configure your device(s).

> **Note:** Any printer driver that's name does not begin with "Loftware" may be a third-party Windows driver. Always use Loftware drivers when available. Use third-party drivers only when Loftware does not offer a native driver for that printer. All Windows printers, for example LaserJets, use third-party drivers.

Device Configuration

Configuring your device(s) before creating your label allows you to be ready to print to it when you have completed your media setup.

When you design a label or tag, you pick the target device for which you want to design the label or tag. Loftware Label Manager uses the selected printer information to make the correct fonts, symbologies, and properties of the printer available. You can design a label or tag for any device, whether you have configured the device or not. However, before you can print labels or write to tags, you must configure the device. The following sections outline several ways to configure devices. You may wish to experiment with several of the methods to see which method works best in your situation.

> **Note:** The number of devices you can configure depends on the product that you have purchased. The Loftware Label Manager supports up to 4 printer queues; the Loftware Print Server may be upgraded to 499 Device queues.

Loftware Device Configuration Wizard

In Loftware Design Mode, choose File | Device Wizard. The **Loftware Device Configuration Wizard** is displayed. This Wizard guides you through the device configuration process.

Step 1 - Choose the Device Number Family Model and Alias

Step 2 - Select Port Type and Port

Step 3 - COM Port Settings (Local Port Type)

Step 4 - Configuration Summary

Step 1 – Choose the Device Number, Family, Model and Alias

1. Click **Next** from the **Device Wizard Welcome** screen. From the Step 1 dialog of the Wizard, choose a **Device** # from the drop-down list. You may choose any device number that is enabled (not grayed out in the Device Configuration grid).
2. Select the device **Family** for the device you wish to configure.
3. Select the **Model** for the device. The list displays only the models or printer family drivers that are supported by Loftware, or in the case of Windows Printers, only those printers that have been added to the Printers folder in Windows.
4. Enter an **Alias** for the device, for example, “Shipping Dock #1”. Creating an alias is helpful, but not required.

Note: The device alias is limited to 75 characters.

The following characters are not allowed when choosing an Alias name.
, ! * ‟ ‟ ; < >
An _ (underscore) may be used anywhere but at the start of the name.

Duplicate Alias names are not allowed. Spaces are ignored when determining duplication. For example, Zebra 123 and Zebra123 are considered the same Alias.

5. Click **Options** to set up label and other options for this device. For printers, this is only necessary if you are using a cutter or stock type other than the default for example.
6. Set the Device options (if necessary), click **OK** and **Next**. Step 2 of the Configuration Wizard is displayed.

Related Information
For information on configuring RFID Devices, refer to the RFID section of this guide.

Step 2 - Select Port Type and Port

The Port Type refers to the Connection Types as described in this section.

1. Choose the Port Type from the drop-down list.
2. Choose the appropriate Port from the drop-down menu. The available ports depend upon the Port Type you have chosen.

Available Ports

Port	Description
Local Port	Port connections that utilize serial (COM), parallel (LPT), or USB (Universal Serial Bus) ports generally involve a communication session between Loftware Label Manager and the printer. The session ends when the entire print job has been sent to the printer. Local connections work well for stand-alone computers with the printers connected directly to the computer. They are not appropriate for network printing. If a COM port is chosen, the Configuration Wizard displays Step 3.
Client-Defined (LPS only)	When configuring a printer for use with Loftware's WebClient or the Internet ActiveX Control (iX), choose CLIENT DEFINE" from the **Port** drop-down list. This is not a printer that has direct access to the LPS or to any of the Loftware Printing Applications such as Range Print. It is a printer that is only driven by the WebClient. The Client computer utilizes Client-defined printers when connecting to the Server using the Loftware WebClient or the Loftware Internet ActiveX Control. Be sure to choose the correct options to coordinate with the printer that the Client computer is using. For example, if the Client computer is using die-cut label stock one day and continuous label stock the next day, you must configure the same printer twice, once for each stock type.
TCP/IP	Enter an IP address and a Port. This is the preferred method for Loftware Print Server systems. Your printer must be connected to an IP addressable Print Server or have an internal Network Interface (NIC) card.
Web User	When this Port is chosen, **Manage Users** is shown and an LPS User can be configured or chosen.
Windows Spooler	Choose a defined printer from the drop down list. Any printer that exists in your Printer Control Panel or Printer folder is listed. Any generic drivers that have been added are also listed. The Windows Print Manager is utilized for queuing requests.

Related Information
For a discussion on the purpose, benefits and drawbacks of each choice, refer to the *Device Connection Types* section of this guide.
For more information, read the *Thin Client Modules* section in the Loftware Print Server User's Guide.

Step 3 - COM Port Settings (Local Port Type)

This step is only displayed if a serial (COM) port is selected. LPT ports do not require these settings.

- Baud Rate
- Data bits

- Parity
- Stop bits

Select the appropriate values to match your printer settings.

Flow Control

Select one of the following options.

Option	Description
Xon/Xoff (default)	This setting is the most common type of software flow control. The printer sends an XOFF character when it cannot receive any more data and an XON character when it is ready for more data. Minimum Null Modem cable is required.
Hardware CTS/RTS	Clear to Send / Ready to Send hardware flow control. The printer and computer use special pins in the serial cable to control the flow of data. If you choose CTS/RTS flow control, you must have a Full Null modem cable that supports the necessary pins.
Hardware DSR/DTR	Data Set Ready / Data Terminal Ready hardware flow control. The printer and computer use special pins in the serial cable to control the flow of data. If you choose DSR/DTR flow control, you must have a Full Null modem cable that supports the necessary pins.
None	Loftware Label Manager sends the data out the port and the printer cannot stop the flow of data.
Intermec Protocol	This setting is a proprietary software flow control developed by Intermec Corp. and is only used with Intermec Printer Language (IPL) printers. Using standard protocol provides the most reliable way to drive IPL printers.

Step 4 – Configuration Summary

After specifying a device (step 1), selecting a port, entering an IP address for TCP/IP connection (step 2), and defining COM port settings if a serial port is selected (step 3), the Wizard takes you to the last step.

The Configuration Wizard displays the attributes of the configured device:

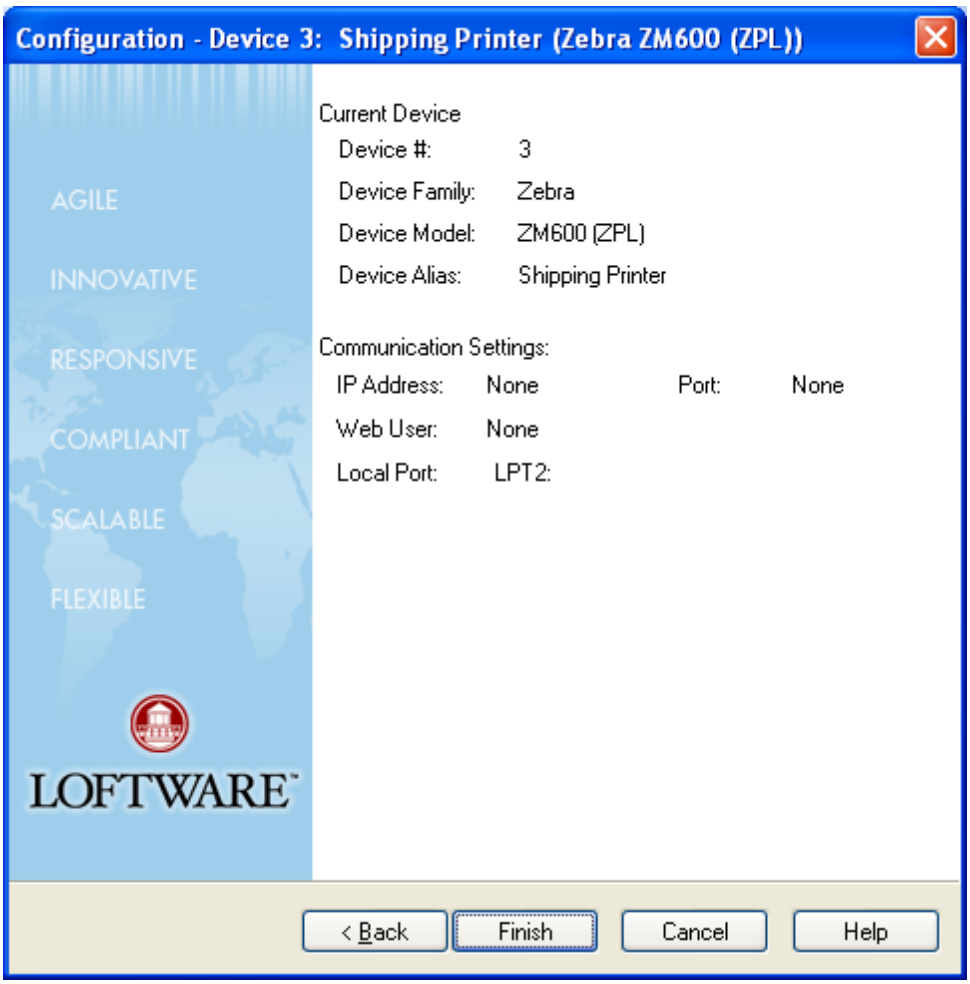


Figure 2.5: Device Configuration Summary.

- Click **Back** if you need to make corrections.
- Click **Cancel** to exit the Wizard without adding the device.
- Click **Finish** if the information is correct and the configuration is complete.

Accessing the Wizard through LLM Device Configuration Grid

You can also access the Loftware Device Configuration Wizard through the LLM Device Configuration grid (described in the following section). Select File | Devices. Click **Add**. The **Loftware Device Configuration Wizard** is displayed, and you can configure devices as previously described.

Loftware Label Manager Device Configuration Grid

In addition to the Device Wizard, you can configure new devices directly in the **LLM Device Configuration** grid.

To access the **Device Configuration** window:

- Select File | Devices menu or press F6. Alternatively, select File | Test Print from the menu and the **Devices** button from the **Test Print** dialog box.

The **LLM Device Configuration** window is displayed. If there are no configured devices, the **Device Configuration Wizard** opens automatically. You can use the Wizard, or click **Cancel** and continue configuring devices in the grid.

Note: If you have previously configured devices in Loftware, your configured devices are populated in the grid. Otherwise, the grid is blank.

The LLM Device Configuration Grid

The column widths of this grid may be resized by placing your cursor to the right of the column header on the vertical line, holding down the left button of your mouse, and dragging the line to the right or the left. This allows you to view lines that are longer than the default grid width. In addition, you may drag columns to change the order of the columns; for example, you may want to place the Alias column before the Model column for easy reference.

Edit Menu

Menu Item	Description
Device Families	Opens View/Hide Device Families dialog to allow filtering of Device Families that are not being used.
Status	When enabled, this allows you to get information on the state of the device.
Delete	Deletes the selected device(s). A message is displayed before the device is deleted, making sure that this is the choice you wish to make.
Restore Grid Defaults	This restores the default width and placement of the columns.

Columns in LLM Device Configuration Grid

The following device properties can be set from the **Device Configuration Grid**.

Column	Description
Family	The name of a Loftware supported device. These are listed by manufacturer, for example, SATO, Zebra, Imtec. **Note:** A Family must be chosen before any of the other columns can be defined.
Model	The model number or name, such as Allegro or 170xiIII.
Port	The Connection Type used by the device, such as an IP address, USB, or COM 3.

Column	Description
Alias	An alternative name given the device, such as Shipping Printer or Warehouse 20. This setting is optional. An alias allows you to give a device a more descriptive name than the default. When you assign an alias: ■ You may use *DeviceName instead of *DeviceNumber when using the file interface of the Loftware Print Server (LPS). ■ The LPS Status view uses the alias instead of the default name. Error messages use the alias. ■ Notifications from the Notification Agent use the alias. **Note:** The device alias is limited to 75 characters. The following characters are not allowed when choosing an Alias name. , ! * " ' ; < > An _ (underscore) may be used anywhere but at the start of the name. Duplicate Alias names are not allowed. Spaces are ignored when determining duplication. For example, Zebra 123 and Zebra123 are considered the same Alias.
Attributes	The attributes of the selected device are displayed once the device is configured. The column holds 5 values separated by commas. ■ 8 - Timeout in seconds ■ 300 - Jobwait in seconds ■ Y- Shared Network Printing (Y=Yes or N=No.) ■ N- Force Extended Mode (Y=Yes or N=No) ■ N- Disable Status Checking The attributes can be changed using one of the following methods: ■ Right-click the row containing the device you wish to change, click **Connection**. ■ Click in the **Port** column, then click the browse button (...). ■ Click **Connection** at the bottom of LLM Device Configuration Grid.
Description	Text that can help identify a printer's type, location, model number, or purpose. **Note:** The description is limited to 75 characters. The following characters are not allowed when creating a description: , ! * " ' ; < > An _ (underscore) may be used anywhere but at the start of the name.

Right-Click Menu

Right clicking a device row opens the right-click menu with the following options:

- **Reassign** allows you to change the device number, by either swapping it with another device number or overwriting an existing device.
- **Connection** opens **Device Connections**.
- **Options** opens **Device Options**. For a printer, label stock, forms control, and advanced options can be set. See the *Device Options* section

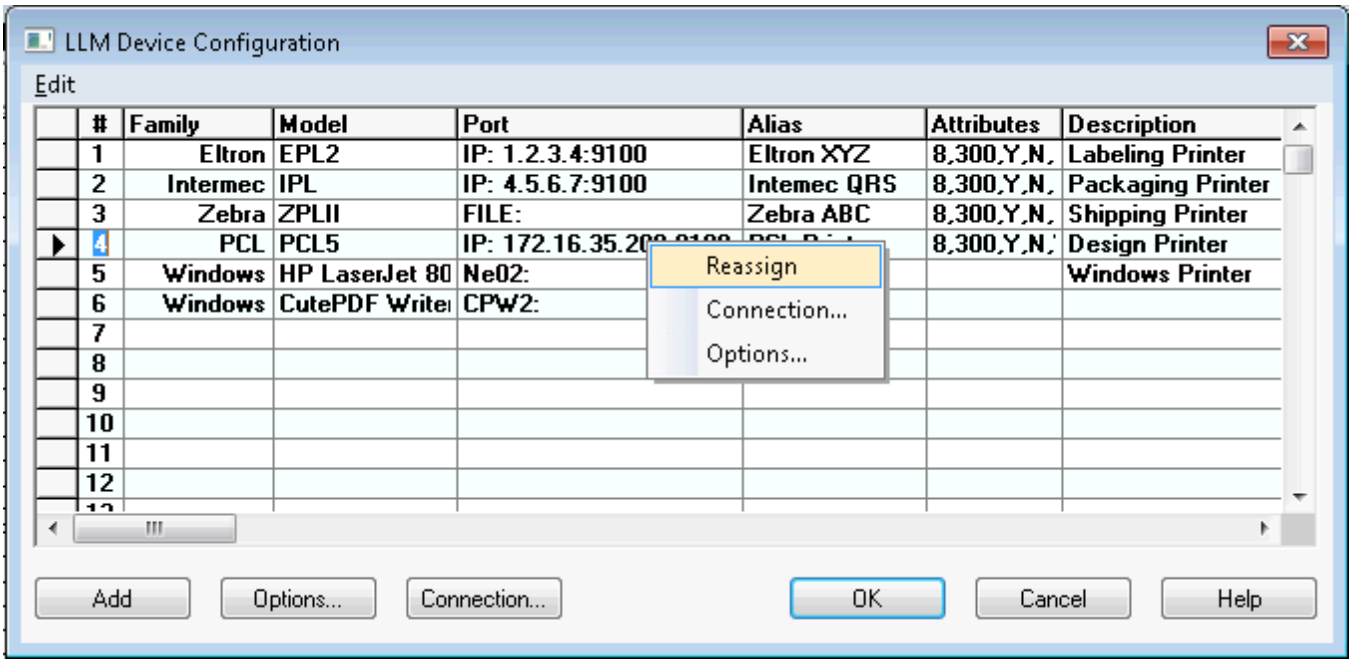


Figure 2.6: Right-click menu options

Related Information
For more information on printing over the Internet, see the Internet Printing section of the Loftware Print Server User Guide.
For more information on these settings, refer to the *Advanced Settings* section in this guide.
For more information on configuring RFID devices, refer to the RFID section of this guide.

Configuring Devices from the Grid

1. Click in the **Family** column.

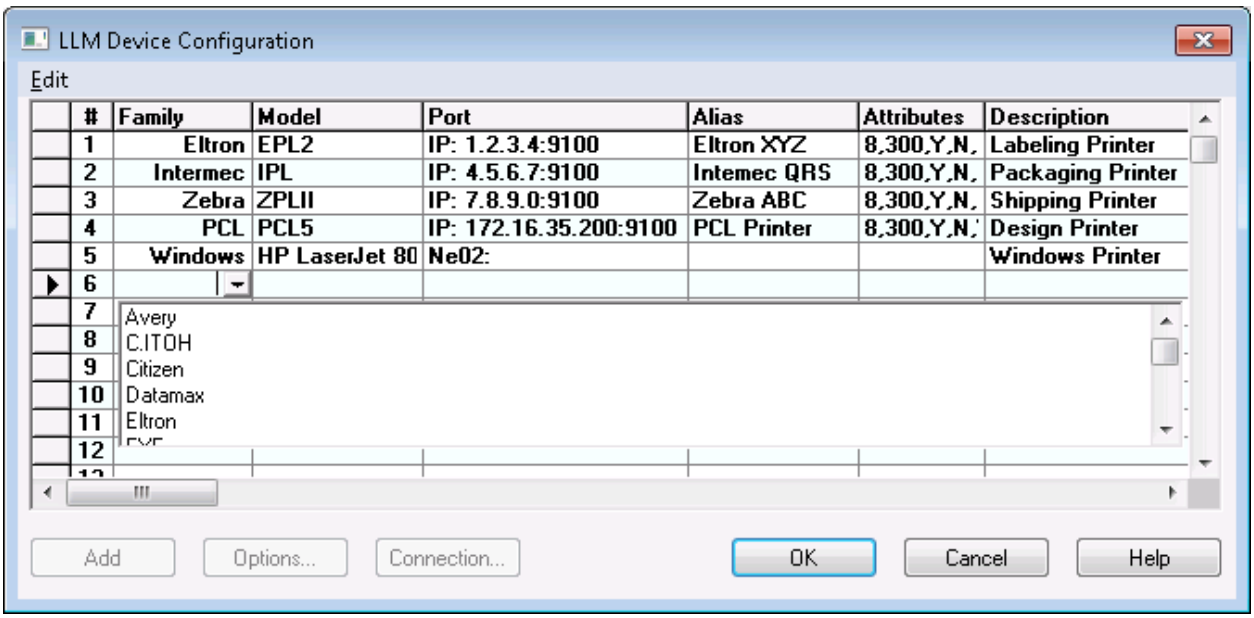


Figure 2.7: Device Configuration Grid Device Families.

2. Click the down arrow to display a drop-down list of Device Families. Choose from the list.
3. Select a device model from the Model column. At this point, the **Options** and the **Connection** buttons become active. If you attempt to choose a Model without first identifying the Family, a message is displayed.
4. Click in the **Port** column, and then click the browse button (...). Alternatively, click **Connection**. This displays the configuration dialog for the selected device.
5. Type an optional device alias in the **Alias** column.

Note: The device alias is limited to 75 characters.

The following characters are not allowed when choosing an Alias name.
, ! * " " ; < >
An _ (underscore) may be used anywhere but at the start of the name.

Duplicate Alias names are not allowed. Spaces are ignored when determining duplication. For example, Zebra 123 and Zebra123 are considered the same Alias.

6. Type an optional description in the **Description** column. Descriptions have the same rules as Alias'.
7. Click **OK** when you are finished updating device information. The Attributes for the device are displayed in the last column of the grid the next time it is opened. Add as many devices as you are licensed for in this manner, or highlight any one of them and change the device options.

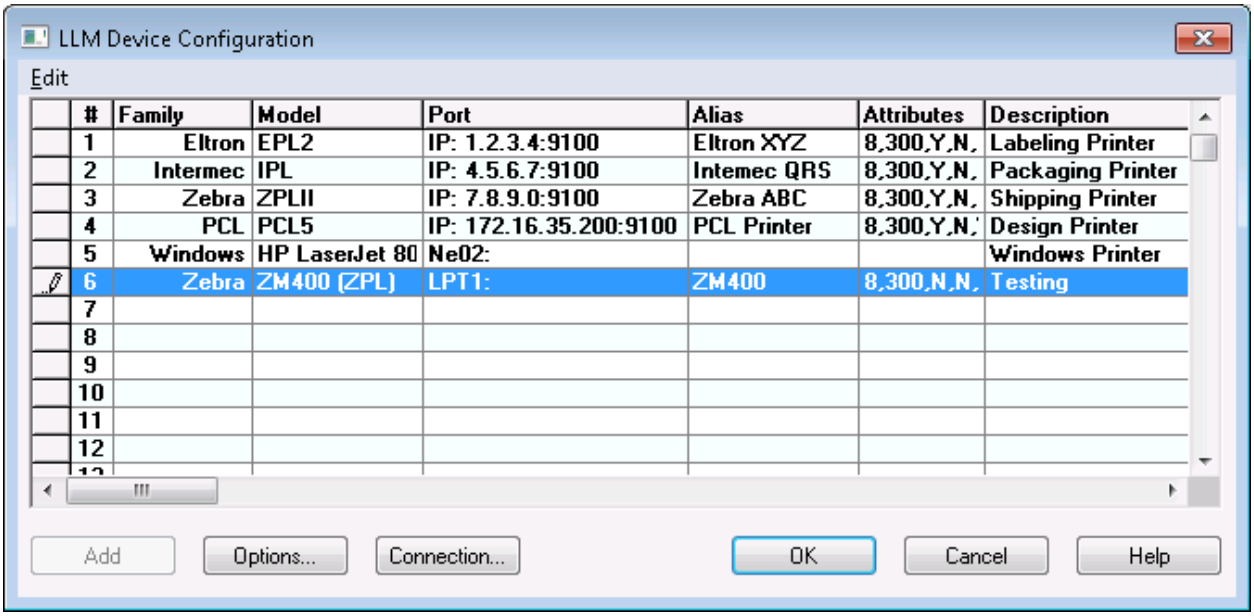


Figure 2.8: Device Configuration Grid displaying attributes

Related Information
For information on limiting the Device Families list, refer to the *Device Families* section of this guide.

Configuring Device Connection

You can configure the connection settings for your printers from the **Configuring Existing Device Connection Settings** window.

Print Using Section

Connection Type	Description
Port	Choose CLIENT DEFINED, LPT (parallel), COM (serial), or USB (Universal Serial Bus) as described earlier.
TCP/IP	Enter an IP address and a Port. This is the preferred method for Loftware Print Server systems. Your device must be connected to an IP addressable Print Server or have an internal Network Interface (NIC) card.
Web User	When this Port is chosen, the browse button (...) becomes active, and an LPS User is chosen.
Print Manager, Spooling	Choose a defined printer from the drop down list. Any printer that exists in your Printer Control Panel or Printer folder is listed. Any Generic Drivers that have been added are in this list as well. The Windows Print Manager is utilized for queuing requests.

Note: USB is not displayed as an option in the Port list unless a USB printer is connected to the computer, the printer is powered on, and its USB Drivers are installed. Upon USB Port selection, the selected printer is queried for its device path and the syntax displayed may be something like "USB002: DeviceName/Type," "USB002: Unknown," or "USB002: ??", depending on the printer information the manufacturer included in the device hardware.

COM Port Settings Section

See Step 3 of the *Loftware Label Manager Device Configuration Wizard* if you are not familiar with these settings.

Advanced Settings Section

The advanced communications can be used to control timing and status reporting. Most users do not need to adjust these settings.

Setting	Description
Timeout	This is the amount of time the program waits for a device to respond to input while printing/writing natively. Timeout using a TCP/IP connection defaults to 8 seconds. Larger values give the device more time to "catch up." Larger values also increase the delay before a device error is reported.
Job Wait	This is the amount of time the program waits for a device to respond to input when it is running a batch of labels (in Extended Mode).
Disable Status Checking	Checking this option disables status checking of the device. This checkbox has no effect on devices that do not support status checking.
Force Extended Mode	Checking this option forces the data for each label to be sent to the device individually. This occurs when the device cannot create the data, such as in alphanumeric incrementing, so the data is created and sent by the subsystem (Loftware).
Asynchronous (LPT)	This check box becomes available by selecting LPT as the Port and then pressing **F2**. When enabled, the print job is immediately cancelled if the printer is in an error state.

LPS Subsystem Logging Section

Subystem logging is used to collect information on the batch print system of the Loftware Print Server. You can enable logging and set the log level on a per printer basis.

Log files are stored in the Loftware Labeling Logs folder which varies by operating system. Select Start | Loftware Labeling | System Folders | Logs to open the Logs folder.

Log files are organized in folders by date.

The LPS Subsystem log files use a prefix BP_ plus the printer number.

For example

A log file for printer number 3, from October 1, 2011 at 9:00 AM will be named BP_003_20111029_09.log.

For more information on the logging features of the Loftware Print Server, see the *Logging* section of the *Loftware Printer Server User Guide*.

Setting	Description
Enable	Select to turn on LPS Subsystem Logging for this printer. The **Log Level** field becomes available.

Setting	Description
Log Level	Select the amount of detail that you want in error messages. ■ DEBUG ■ INFO ■ WARNING ■ ERROR

Detailed Status Button

For printers configured to use IPL and ZPLII language, the **Detailed Status** button is available. Click **Detailed Status** to open the **Detailed Status Configuration** window. See the Detailed Status section for your printer in this guide for information on the specific Status checks that you can set.

Detailed Status for Intermec (IPL and Direct Protocol) Printers

Detailed Status for Zebra (ZPLII) Printers

Reassign a Device Number

The Loftware Device Configuration Grid allows extra devices to be configured beyond the number of your device seats, up to 499.

Unassigned devices are in the Unassigned range that is the gray-shaded section of the grid. Only devices in the Assigned Range are visible in the device drop down lists in Design and On Demand Print.

Note: Windows printers cannot be configured in or moved to the Unassigned Range.

If you only have 20 device seats, for example, the grid rows are shaded blue and white for the first 20 devices. The rest of the numbered device rows (21-499) are shaded gray. The gray-shaded rows may be filled with configured devices, but they are considered unassigned - not available for printing.

Configuring Unassigned Devices

Any time you have a device in which the Device Specific Options change from day to day, it is timesaving to configure this same device again to include all the ways in which it is used. When you want to use the same device but with different options, you can Reassign the Device Number to swap the devices from the assigned to the unassigned area for quick printing of labels. This prevents you from having to reconfigure the device each time you want to use it with other options.

You may also consider using the reassign feature in the following situations:

- When using a cutter with a printer
- When changing an advanced option such as a different Character Set
- When sending a print job to different client computers

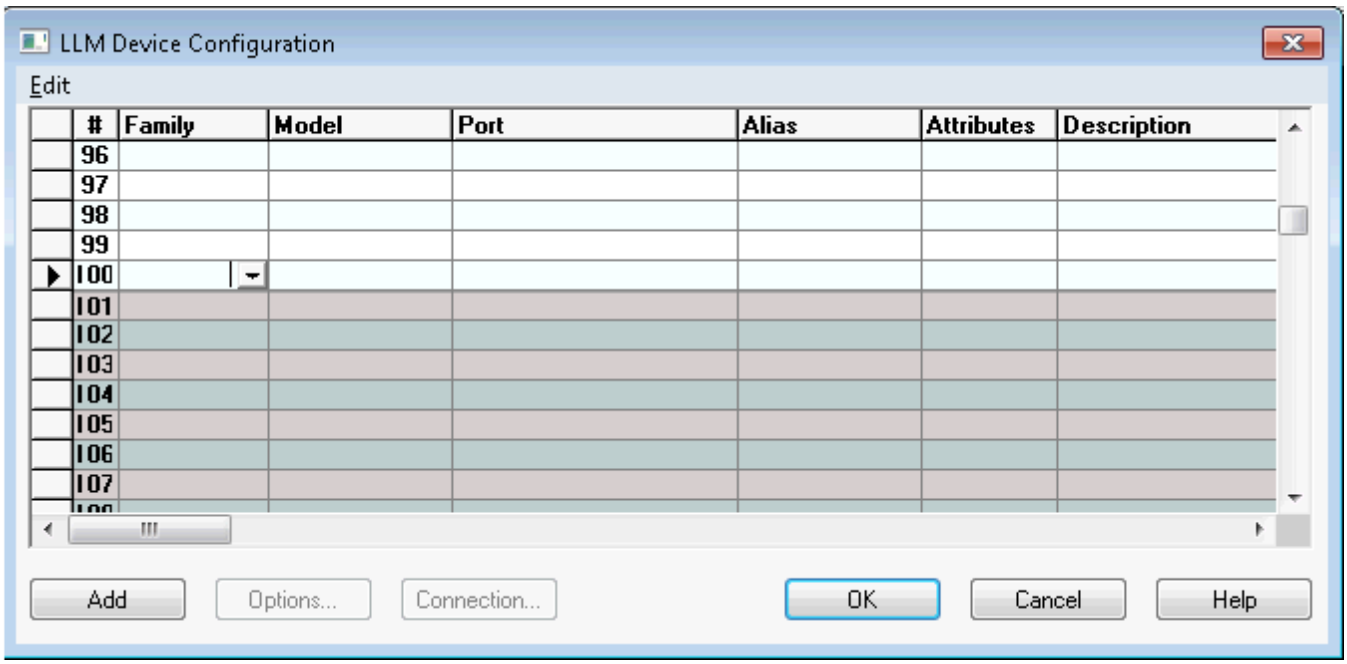


Figure 2.9: Assigned and Unassigned Area of LLM Device Configuration Grid

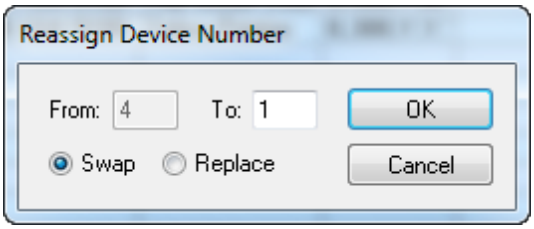
For example

If you have 8 print seats, and your # 8 printer usually uses Continuous stock but occasionally uses Die Cut stock, you can configure this same printer twice - as Device 8 and Device 9. Set the **Device Option** under **Stock Type** to **Continuous** for Device 8 and **Die Cut** for Device 9. When you need to use the printer with the Die Cut stock, right-click the row for Device 9, click **Reassign**, and swap Device 8 (Continuous Stock) with the Device 9 (Die-Cut Stock).

Reassign a Device

Use this procedure to move a device from one row to another.

1. Right click on the device that you want to reassign, and select **Reassign**. The **Reassign Device Number** window opens.



Reassign Device Number Window

2. Enter the number of the row where you want to move the selected device in the **To** field.
3. Select **Swap** or **Replace**.
   - Swap - Switch the device number of the selected device with the number entered in the **To** field.
   - Replace - Replace the device entered in the **To** field with the selected device.
4. Click **OK**.

The selected device is moved to the new row.

Configuring RFID Devices

This section assumes that you have configured devices in the LLM Device Configuration grid, as previously described and that you are familiar with the "assigned" and "unassigned" areas of the grid.

In order to use an RFID printer, you must have an RFID Printer License. You may view your license from the Help|About screen in Label Design Mode. License settings are described in the **License Information and Registration** section of the Loftware Print Server and Label Manager Installation Guide. The following list shows the pertinent settings for using the Loftware RFID Solution.

```
RL- LPS[10/5/2] [2] [1] [1] P{MSNRCBODX}2358847639
Version: 9.0.2.0
Serial Number: RL- LPS[10/5/2] [2] [1] [1] P{MSNRCBODX}2358847639
Printer Seats: 10
RFID Printers: 5
RFID Enabled: Yes
```

- LPS Premier Plus RFID is required to print RFID smart labels. RFID Enabled will indicate **Yes** if RFID functionality is available.
- To print smart labels, there must be at least 1 RFID Printer licensed seat. You may use an RFID Printer license to drive a non-RFID Printer, but not vice versa.

Example 1

With this license, when you configure one RFID printer, the total number of devices left available to configure would be 9, a maximum 4 could be RFID printers.

Example 2

With this license, when you configure 2 RFID Printers, then the total number of devices left available would be 8, a maximum 3 of which could be RFID printers and the remaining 5 seats can only be used for non-RFID printers.

- Please contact Loftware's Customer Service department at (603)-766-3630 to purchase the RFID module or additional RFID device seats.

If you are in Demo Mode

Any number of RFID devices can be configured in the grid up to the number of available device seats (non-gray area in the configuration grid). When these devices are used in demo mode, the EPC / DoD tag data will be scrambled just like any other variable field in demo mode.

If you have a valid license but do not have the RFID module

Any number of RFID devices can be configured up to the number of available device seats (non-gray area in the configuration grid). They will be shown in red instead of black, which indicates that you cannot print/write to these devices. Attempting to print or write to an RFID label or tag in this case will result in an error message. This scenario with LPS will result in the job being routed to 'Critical Failure' which can be viewed from the Status Client. Non-RFID jobs in the LPS will still function normally.

If you have a valid license with the RFID Module

You can configure up to the number of RFID seats of RFID enabled devices. Any RFID printers configured after that will be shown in red and cannot be printed or written to as described above.

> **Note:** To use your RFID printer as a normal barcode printer, choose the model that does not have 'RFID' in its name model designation. In this case, the printer will work just like any other printer without the RFID capability.

About Printer Family Drivers

Starting with the Loftware Print Server Version 10.0 you may be able to select the printer language that your printers use, such as ZPLII, as the **Model** from the Device Configuration Wizard or Grid and successfully drive printers and design labels that can be shared among different printer models.

You can use the Family Driver to design labels and drive printers that use one of the supported printer languages even if that printer is not listed among the Loftware supported printers. For example, you may have a new Intermec printer that has not yet been added to Loftware's supported printers. You can select IPL as the model and successfully drive your new printer.

Using a Family Driver to drive different models from the same printer family may allow you to reduce the number of labels and label templates that you use. For example, a single label configured with the ZPLII Family Driver could be used with any model of Zebra printer that uses the ZPLII Printer Language.

You may have printers from different manufacturers that all speak a common printer language. If you configure each with the same printer family driver, you may be able to reduce label redundancy and increase consistency among labels.

Supported Languages

The following Printer Family Drivers can be used. See the Supported Printers and Drivers topic for a list of the family drivers available per manufacturer.

ZPL II Family Driver

Zebra Printer Language II (ZPL II®) is a printer language used to drive Zebra printers. ZPL II is listed as a Loftware native driver (**Model**) among the available printers. You can select the ZPLII Family driver in the **Model** field of the Device Configuration Wizard and Grid.

You can use the ZPL II Family Driver to design labels and drive printers that use the ZPL II Printer Language even if that printer is not listed among the Loftware supported printers.

ZPLII - For printers that use the Zebra Programming Langauge II (ZPL II®)

EPL2 Family Driver-

Eltron Programming Language (EPL2) is a printer control language. EPL2 is listed as a Loftware native driver (**Model**) among the available printers.

EPL2 - For printers that use Zebra's EPL2 or Intermec's ESIM printer language

Intermec Printer Language (IPL) Family Driver

Intermec Printer Language (IPL) is a printer language used by Intermec printers. IPL is listed as a Loftware native driver (**Model**) among the available printers.

IPL - For printers that use Intermec Programming Language

Intermec Direct Protocol Family Driver

Intermec Direct Protocol is a subset of the Intermec Fingerprint (FP) printer language and is used by certain Intermec (formerly UBI) printers. **Direct Protocol** is listed as a Loftware native driver (**Model**) among the available printers.

Direct Protocol - For printers that use Intermec Fingerprint or Direct Protocol language

DPL Family Driver

Datamax Printer Language (DPL) is a printer language used by Datamax and certain Datamax-O'Neil printers.

DPL - For printers that use Datamax Printer Language.

> **Related Information**
> Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Select a Family Printer Driver

To use a family driver to develop your label and drive your printer, you must configure a printer with the driver, and set up the label to use the family driver.

Configure a Printer to use a Family Printer Driver

Using the Device Configuration Wizard

See Loftware Device Configuration Wizard for more information on using the **Device Wizard** to configure printers.

1. Select File | Device Wizard. The **Device Wizard** opens.
2. During Step 1, select the appropriate family printer driver from the **Model** field.

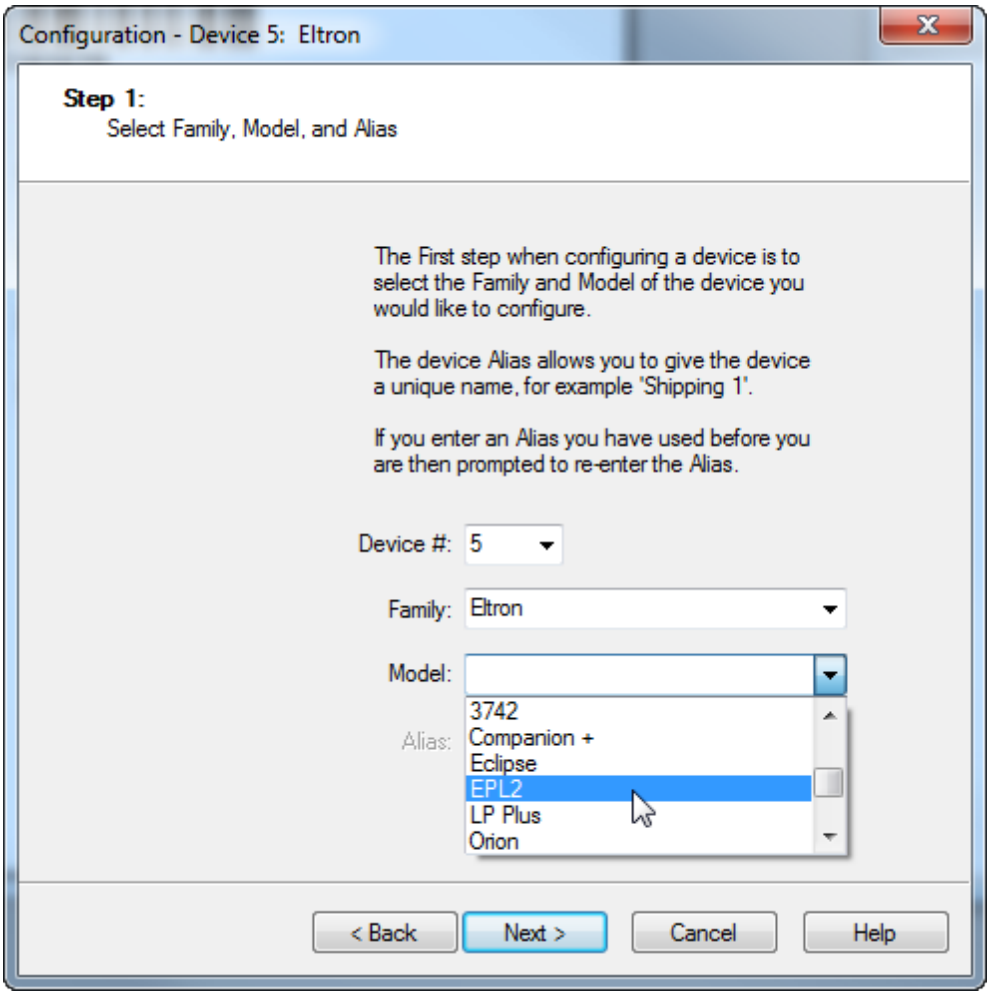

Configuration - Device 5: Eltron
Step 1:
Select Family, Model, and Alias
The First step when configuring a device is to select the Family and Model of the device you would like to configure.
The device Alias allows you to give the device a unique name, for example 'Shipping 1'.
If you enter an Alias you have used before you are then prompted to re-enter the Alias.
Device #: 5
Family: Eltron
Model:
Alias:
3742
Companion +
Eclipse
EPL2
LP Plus
Orion
< Back
Next >
Cancel
Help

Figure 2.10: Example Family Driver Selection using Device Configuration Wizard

Using LLM Device Configuration

See Configuring Devices from the Grid for more information on using the device configuration grid to create or modify printers.

1. Select File | Devices, or press F6. The **LLM Device Configuration** grid opens.
2. With a **Family** selected, select the appropriate family printer driver from the **Model** field.

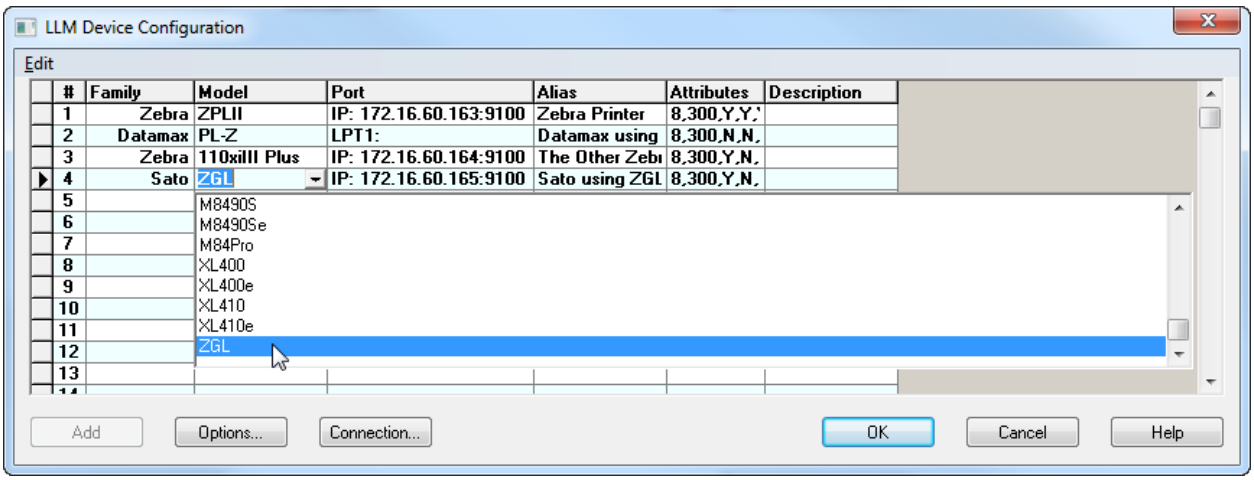


Figure 2.11: Example Family Driver Selection using Device Configuration Grid

Setup the Label to use a Family Printer Driver

Using the New Media Wizard

See Creating a New Label for more information on using the **New Media Wizard** to create a label.

1. Select File | New. The **New Media Wizard** opens.
2. During Device Selection, select the appropriate manufacturer and family printer driver from the **Model** field.

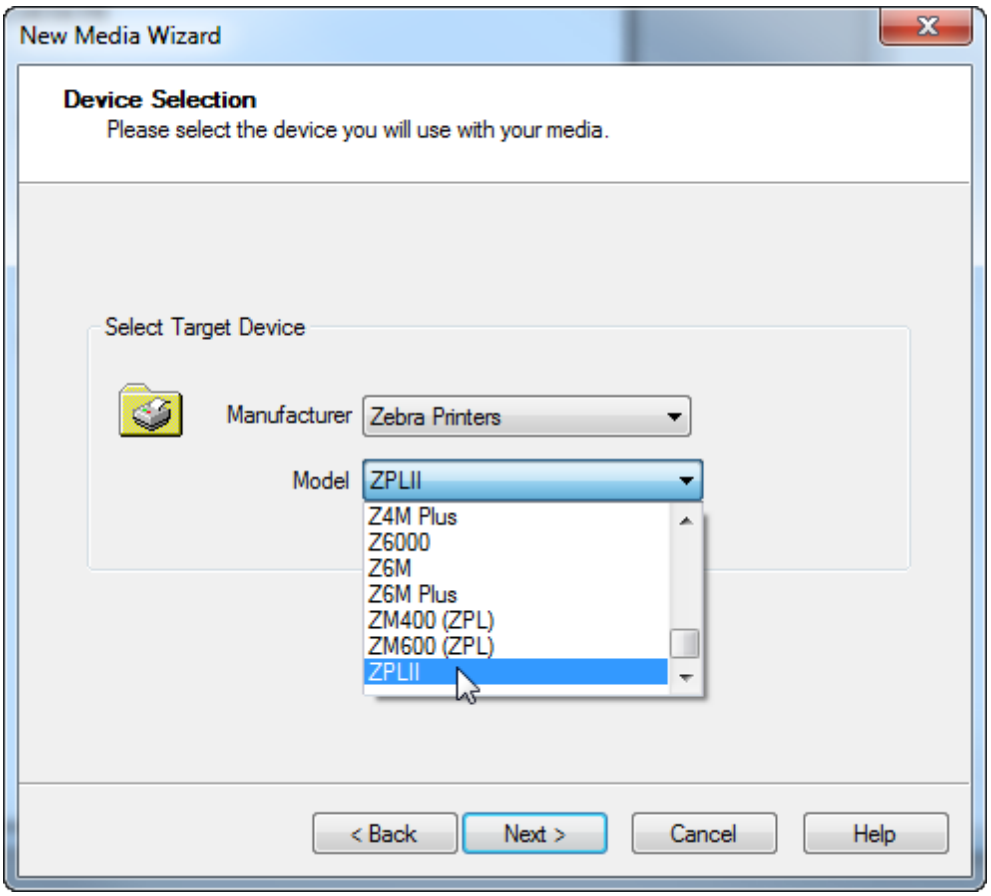


Figure 2.12: Example Family Driver Selection using New Media Wizard

Using the Label Setup and Properties Dialog

See Label Setup and Properties for more information on using the Media Setup tabs to modify a label.

1. Select File | Media setup or press F5.
2. On the **Label Setup** tab, select the appropriate manufacturer and family printer driver from the **Model** field.

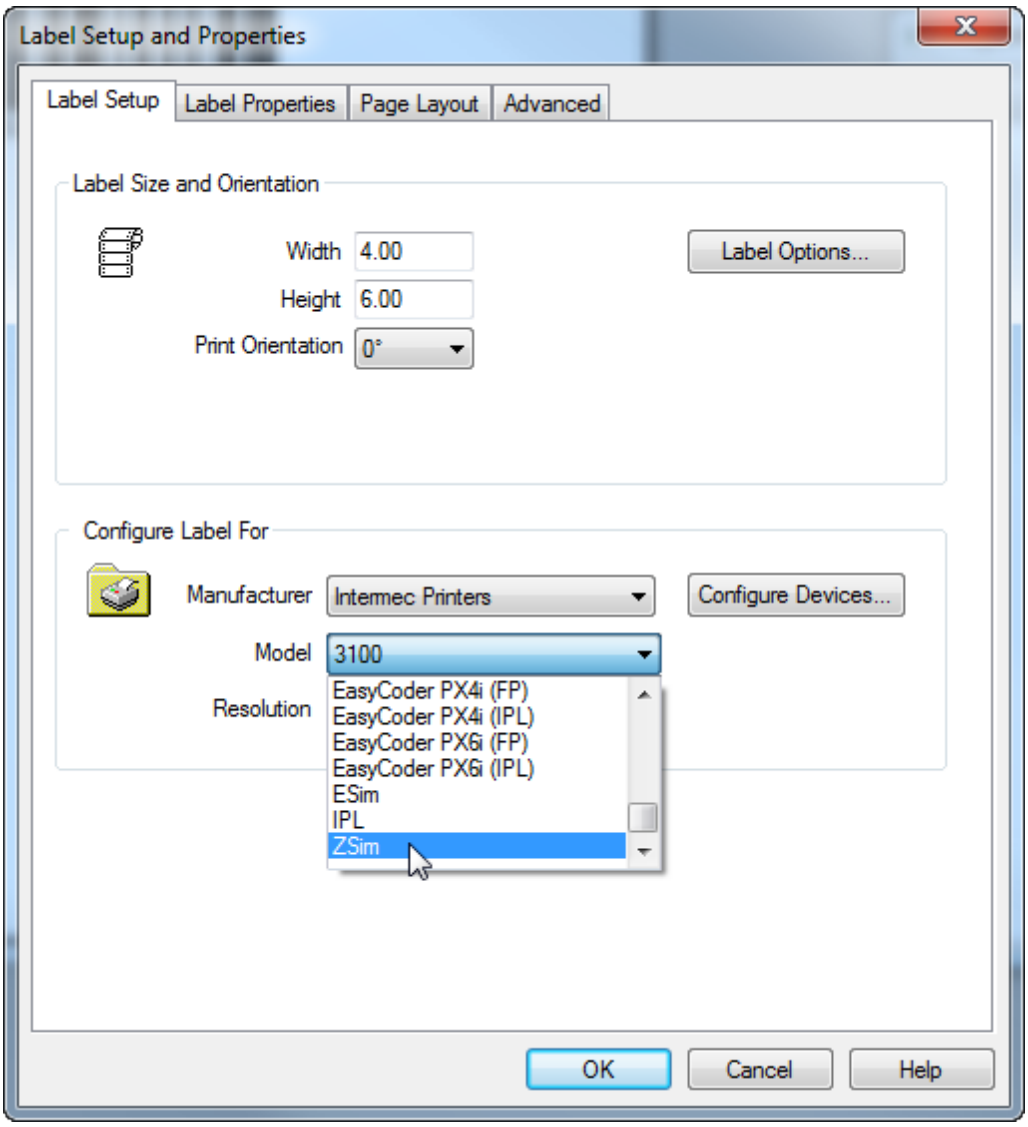


Figure 2.13: Example Family Driver Selection using Label Setup and Properties

Configuration with Windows Printers

Windows printers can be configured from the Loftware Label Manager Device Configuration grid - **Options** button or from a label's LSO page.

> **Note:** If you are working in an environment with multiple LPS installations and versions, be aware that sharing LLM / LPS version 9.5 or later Windows printer configuration files with a pre-9.5 version will wipe out any Windows printer configuration settings made in Version 9.5. Windows printer settings made in 9.5 or later are not supported in pre-9.5 versions. Refer to *Sharing Windows Printer Configuration Across LPS Versions* in the Upgrade and Import section of the Loftware Print Server and Label Manager Installation Guide for a best-practice solution.

Loftware Label Manager can print to all of your computer printers. This includes standard Windows printers such as LaserJet, dot matrix, and bubble jets. It also includes third-party Windows drivers purchased for barcode label applications.

Loftware makes no claims as to the performance or reliability of third party drivers.

Configuring a New Printer Connection for Windows or Third-Party Drivers

1. Add any Windows or third-party printer(s) through Windows: **Start** | **Printers and Faxes**
2. In Loftware Label Manager, press **F6** or select **File** | **Devices**.
3. Select **Windows** in the Device Family drop-down list - in either the Wizard or the LLM Device Configuration grid.
4. Select a printer from the list of configured Windows printers.
5. Configure the printer as you would any other Loftware printer from the PSO page. Click **Finish**.

Note: Choose 300 or 600 dpi for LaserJet resolution. Higher values affect download times; lower values adversely affect label quality. Barcodes do not require higher resolution.

Fonts

Some Windows Drivers map TrueType fonts that are sent to them as native printer fonts. If this happens, printing is much faster, but the font style may not exactly match the font displayed in Loftware Label Manager Label Design.

Windows / Spooling Information

It is important that multiple printers in your Printer Control Panel or Printer Folder are not configured to use the same local port.

A scenario in which this causes problems is as follows: If a variety of print jobs are being sent directly to an Intermec printer on LPT 1, the Loftware Label Manager is sending these jobs faster than the printer is able to print, and the printer gets into a “busy” state. If a Windows printer such as a LaserJet is also configured to print to that same LPT port, Windows redirects the jobs to the spooler of the LaserJet printer. This results in lost print jobs, as the printer never receives the redirected data.

Configuring Devices with the LPS Running

Note: You must purchase and license LPS to use the Loftware Print Server.

Devices can be configured with the Loftware Print Server running. This allows you to use the LPS on a 24/7 basis - you can configure devices while continuing to print labels. The LPS monitors device changes, and when a change is detected, the device list is updated and notification is sent to the connected On-Demand Print Clients, the Status Clients, and the Notification Agents. There are no messages displayed, but the list of devices is updated on-the-fly.

Note: A slight delay of processing may occur during the configuration update process; this is normal as the print engine is updating its settings accordingly.

Issues with Device Configuration

Be aware that a problem could develop on the client-side if a device is deleted on the server side.

For example

An ODP Client attempting to print to the deleted device would receive a message that states "No device configured."

Also, when the list of devices is updated because of a configuration change, if more than one device of the same make and model device exists, the default is to the first device in the list that matches the loaded label.

For example

Zebra 170XiIII printers are configured as Device #'s 1, 5 and 7. The client user is printing to Device 5, and the device configuration is changed. The default device then becomes Device 1. This may create a problem for a user who is attempting to print and does not notice that the device list has changed. The label that was previously printing without any problems is then not able to print. This is another case where a Device Alias can be very helpful, as the client user will more likely notice a change in the alias of the device, as opposed to just a number.

Device Options

In addition to device model and connection information, a configured device also contains setup information or Printer Specific Options (PSOs) / Device Specific Options (DSOs) and Label Specific Options (LSOs).

To view and change the setup of the device

1. Select File | Devices, and select any cell in the printer's row.
2. Click **Options**.

These settings apply to all media printed or written to this configured device.

Note: The options you see in the dialog box depend on the selected device in the **LLM Device Configuration** window.

Related Information

See the Printers and Labels section of this guide for information about printer-specific and label-specific options for your device.

Sections of Device Options

Note: The Device Options window is different for each Device Family.

Label Options Section

This is the section where certain label options are chosen, such as Supply Type and Buffer Mode.

Forms Control Section

This area instructs the printer how to behave in terms of the stock that is chosen.

Advanced Options Section

This section allows for more customization of the printing process, such as Memory Modules and Symbol Sets.

Custom Command Section

Used for a non-typical function.

Device Options Example

Most printers have three Supply Type Options: Continuous, Die Cut Labels, and Mark Stock. If you choose **Die Cut Labels** and you then add continuous stock to the printer, the printer responds as if it still had the Die Cut stock in it. The supply type must be changed in this case, or you can configure the same printer in LLM Device Configuration with the new stock.

Related Information

For more information on media setup, refer to the *Designing Labels* section of this guide.
For descriptions of options specific to each device family, refer to the *Printers and Labels* section of this guide.
For more information on Symbol Sets, refer to the *International Printing* section in this guide.
For more information on the custom command, refer to the Printers and Labels section of this guide.

Shared Network Printing

Whenever you are printing to the same printer from 2 or more installations of Loftware Label Manager or other applications, the Shared Network Printing check box must be enabled. If you are using the LPS, this only needs to be done in one place. This ensures that labels being sent from one client do not corrupt other client's data. Formats and images are downloaded to the printer each time a label request is made. Therefore, Shared Network Printing may be considerably slower than other options.

Related Information

For more information on network printing, refer to the Network Printing section of this guide.

Device Status

This section provides information about how devices respond with status information when the various types of connections are used. Understanding the different types of device status messages under various connection scenarios is the key to being able to print your labels successfully. You are encouraged to read the following information carefully.

Query Status Request

Query requests are only supported on serial (COM) ports. If you are using a serial connection, a query status is very helpful to troubleshoot whether you have the proper cable, baud, parity, stop bits.

Query Status Requests with Serial Printers are a two-way communication query between Loftware Label Manager and any printer that supports status sending. Checking the status determines if Loftware Label Manager is communicating correctly with the printer, whether or not the printer is on-line or in an error state, and other hardware information such as firmware version and available memory.

To check device status, select File | Device Status or press F7. A **Device Status** dialog box is displayed.

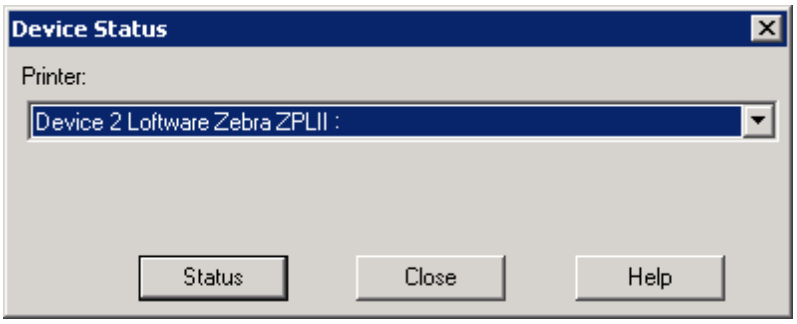


Figure 2.14: Device Status Dialog Box

- Click **Status**. Loftware Label Manager sends a status request to the device and, if successful, returns a message box.

If the device is in an error state, an error code is displayed in the message box.

Related Information

Refer to your device manual for information on error messages.

Understanding Printer Responses

A printer response is defined as the feedback displayed by an application when making a request to a device that is in an error state. Each device family may behave slightly differently, and the type of connection can affect the response. This section provides information on what can be generally expected as responses from devices in scenarios involving the different types of applications and device connections.

Serial

A serial connection is one that has been configured in Loftware Label Manager using a COM Port. This is a two-way communication between the computer and the device providing more detail than other types of connections. For example, if your printer is out of stock, you may get a specific error message:

A Recoverable Device Error means that, when the error is corrected, the print job continues. This is true for USB as well as Parallel printing.

Benefits of Using a Serial Connection

- More detailed status information
- Cable to printer can be much longer than a parallel cable (up to 50 feet).

Drawbacks

- Requires a specific NULL/MODEM cable
- Requires that printer settings for baud, stop bits, parity, data bits, and flow control match the same settings in the software.
- Slower connection speed than the rest of the connection types.
- The number of serial ports on a computer is limited to 1 or 2.
- Loftware does not recommend serial connections when using the Loftware Print Server

Parallel

Stand-alone parallel printing involves a connection from a computer's parallel port (LPT) to a Centronix (parallel) port on the printer. Most new printers have a parallel port; many older or less expensive printers may not. If the printer is in an error state, a message is displayed after an attempt to print the label. With this type of connection, it may take from 1 second to 5 minutes to display the message depending on the type of error. When no power is supplied to the printer, the error message is displayed instantaneously.

In other cases, such as the printer being in a pause or stock/ribbon-fault mode, error messages may not be received until the printer's memory buffer is full. The amount of time this takes depends on the size of your label and how many requests were made. When the fault condition is corrected, the labels print (as long as the printer has not been shut off).

Benefits of Using a Parallel Connection

- No communications settings (baud, parity, etc) need to be set.
- Parallel connections are 3 to 5 times faster than serial connections.
- USB data transfer rate even faster, print quality high as well.

Drawbacks

- Shorter cable lengths (15 feet max)
- Status is not as detailed as a serial connection, but is considered "good enough."
- Computers usually only have one parallel port.

Note: Loftware does not recommend using parallel or USB ports with the Loftware Print Server.

Spooling

Print Spooling uses the Windows Print Manager to queue requests to the device. In stand-alone printing to a spooler, if the device is in an error state, an error message is displayed after an attempt to print the

label. When using a Generic Text Driver for example, if an error occurs, Windows displays information about the status of the device. Many times, if the problem with the device is corrected and you click **Retry**, the label prints (assuming there are no other errors).

Benefits of Spooling

- Requests are queued in the Windows Print Manager.
- Devices that are connected to a computer on the network can be shared with other computer's on the network.
- Many devices (hundreds) can be set up on your network and made available for the Loftware Print Server or stand-alone applications.

Drawbacks

- Can be more difficult to set up.
- Increased CPU Utilization

USB

Universal Serial Bus (USB) is a protocol used for connecting computer peripherals to a computer. USB provides an expandable, hot-pluggable Plug and Play serial interface that ensures a standard, low-cost connection for peripheral devices such as keyboards, mice, joysticks, printers, scanners, storage devices, modems, and video conferencing cameras. Migration to USB is recommended for all peripheral devices that use legacy ports such as the PS/2, serial, and parallel ports. Up to 127 USB devices can be connected to one computer. A main feature of the USB standard is that it allows many computer peripherals to be easily swapped for another without having to turn off the computer. However, this is not recommended for configured Windows or Loftware USB printers because the printers are configured for the given Port assignment when the printer is connected to the USB Port. USB 1.1 currently supports a data transfer rate of 12 megabits per second.

This high speed gives USB quite an edge over standard serial and parallel connections. USB 2.0 supports even higher data transfer rates of up to 480 megabits per second for connection to high-performance peripherals.

Benefits of USB

- High Data Transfer Rate
- Longer Cables can be used, up to 30 feet
- Up to 127 Ports may be utilized on one computer
- Generally easier to connect, plug and play, little configuration, if any

Drawbacks of USB

- Troubleshooting may be more difficult; behaviors under error conditions vary a great deal.

The USB 1.1 communication architecture connects a computer to a USB printer via a simple four-wire cable. Many label printers are now available with USB port capability, and Loftware Applications now have the ability to print to these printers through their USB port.

TCP/IP

An IP connection involves configuring the LPS to print directly to the IP address of the device. When an IP address in stand-alone printing is used, error messages are displayed after an unsuccessful attempt to print the label.

For example

If Loftware is connecting to a device that has an IP address but the device is not powered on, the connection fails and an error message is displayed. In this scenario, when the device is powered back up, the label does not print; it has to be resent to the device and is then printed. The Loftware Print Server recovers and prints the label in this case. In another scenario where the device is powered up but is in pause (stock/ribbon fault) mode, an error message is not created until the device's memory is full, and then the error message is displayed. When the fault condition is corrected, the labels that are in the device's memory are printed, as long as the device was not shut off.

Note: TCP/IP is the preferred connection for the Loftware Print Server.

Benefits of using TCP/IP connections

- Device can be anywhere LAN/WAN/Internet.
- Connection is fast and reliable.
- Easy to set up, as long as appropriate network hardware is in place.
- Many devices (hundreds) can be set up on your network and made available for the Loftware Print Server or stand-alone applications.

Drawback

- Device requires a network TCP/IP address that involves extra setup. See your network administrator for more information on this.

Related Information

If you are driving the devices from your application using the Loftware Print Server, one way to get acknowledgement that your print request is successful is to use the TCP/IP interface to the LPS that is described in *The Loftware Print Server* section of the *Loftware Print Server User's Guide*.

As you are reading this section, you may need to refer back to the section on device connections for more information on serial, parallel USB, spooling, and TCP/IP connections.

Detailed Status for ZPLII Printers

You can use Detailed Status to check the state of a ZPLII printer before or after a print job. You can view detailed status information on the Loftware Status Dialog.

Requirements

Force Extended Mode and Disable Status Checking are selected when you enable Detailed Status. These settings are required for the Loftware Print Server to retrieve detailed status.

Detailed status is only supported on printers with internal Network Interface Cards (NICs). External print servers such as a the Zebra ZebraNet® PrintServer II are not supported.

Configure Detailed Status

1. Open the Devices grid.
2. Select a Zebra printer that uses ZPLII, and Click **Connection**.
3. Click **Detailed Status**. The **Detailed Status Configuration** dialog opens for the selected printer.

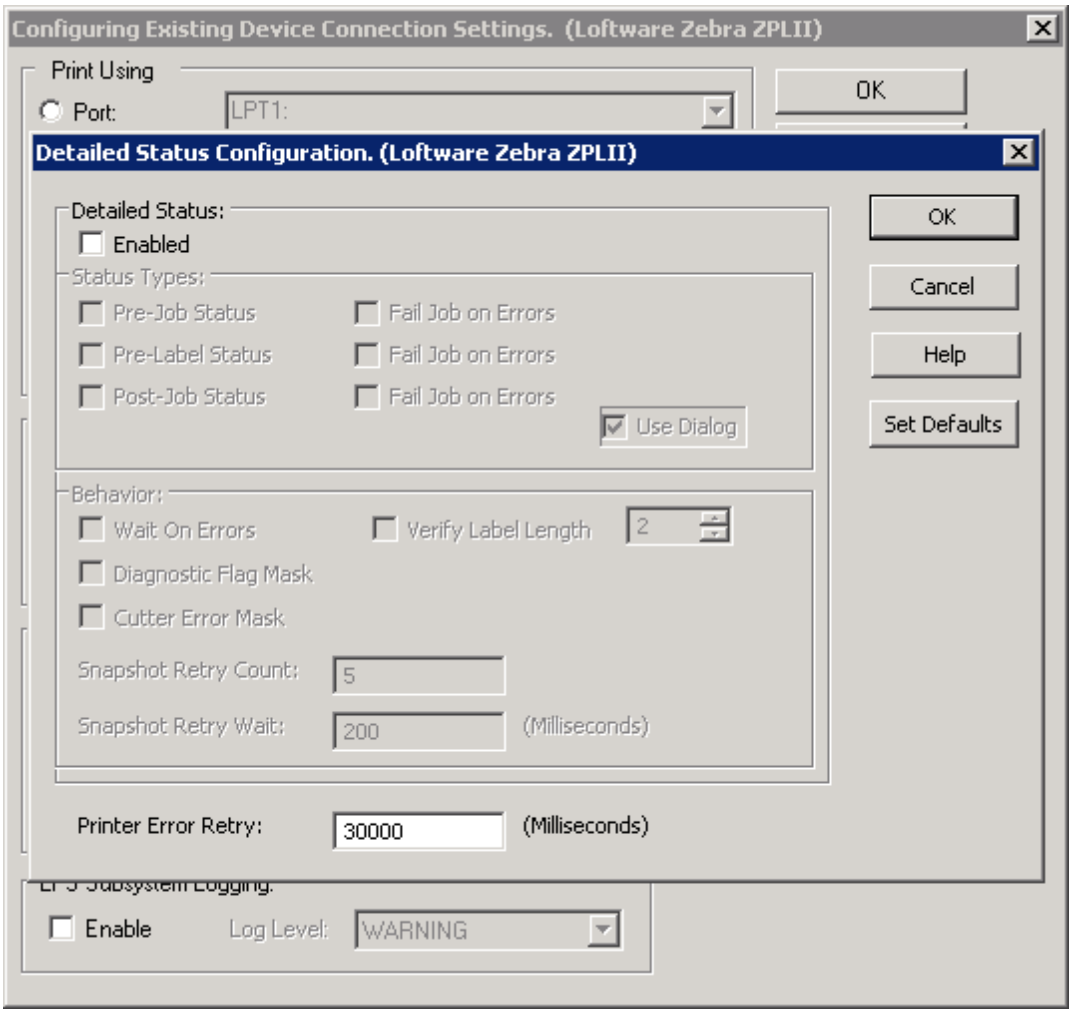


Figure 2.15: Detailed Status Configuration window

4. Click **Enabled**, and select the **Status Types** and **Behaviors** to check.
5. Click **OK** to save the configuration, click **OK** again to save the connection settings.

Detailed Status Section

Select **Enabled** to turn on Detailed Status for the selected printer.

Status Types Section

Status	Description
Pre-Job Status	Check the state of a printer before sending a print job - single label or many labels in a pass, csv, or xml file.
Pre-Label Status	Check the state of the printer before a label is sent.
Post-Job Status	Check the state of the printer after the print job is complete.
Fail Job on Errors	Set per status. Select to discontinue printing if there is a problem with the printer. **Note:** If you select **Fail Job on Errors** and you have enabled device notifications for only **Device Errors** on the **Notification's Dialog**, you will NOT receive notifications.

Behavior Section

Behavior	Description
Wait On Errors	Select **Wait on Errors** to have the system wait and retry a job until a printer error is fixed. For example, if a printer's head was lifted you would have the chance to fix the problem before the error was reported. This may be useful in an on-demand situation where an operator could easily see that there is a problem with the printer.
Diagnostic Flag Mask	Select **Diagnostic Flag Mask** if you set a printer to Diagnostics mode and you need to print to it for testing. This will allow the Detailed Status check to ignore the Diagnostic Flag Mask entirely if the printer reports this. **Note:** This option is only for printers that report the Diagnostic Flag mask.
Cutter Error Mask	Select **Cutter Error Mask** to ignore any cutter errors reported by printers that report cutter errors.
Verify Label Length	Select **Verify Label Length** to compare the printer's reported label length with the label that is about to print. Enter the percentage of allowed difference between the actual printer value and the expected value for the label.
Snapshot Retry Count	Set the number of times to attempt to retrieve a valid status (success or critical error) from the printer.
Snapshot Retry Wait	Set the amount of time to wait between Snapshot Retries. **Note: Snapshot Retry Count** multiplied by Snapshot Retry Wait can give you an estimate of the maximum amount of time that the detailed status check should take.

Printer Error Retry Setting

The Printer Error Retry setting allows you to configure the number of Milliseconds the Loftware Print Server waits to retry sending a print job after an error.

Set Defaults Button

Returns the Detailed Status Configuration window to its default state (disabled).

Detailed Status for IPL and Direct Protocol Printers

You can use Detailed Status to check the state of an IPL or Direct Protocol printer before or after a print job. You can view detailed status information on the Loftware Status Dialog.

Requirements

Force Extended Mode and Disable Status Checking are selected when you enable Detailed Status. These settings are required for the Loftware Print Server to retrieve detailed status.

Detailed status is only supported on printers with internal Network Interface Cards (NICs). External print servers such as Intermec EasyLan are not supported.

Configure Detailed Status

1. Open the Devices grid.
2. Select an Intermec printer that uses IPL or Direct Protocol, and Click **Connection**.
3. Click **Detailed Status**. The **Detailed Status Configuration** dialog opens for the selected printer.

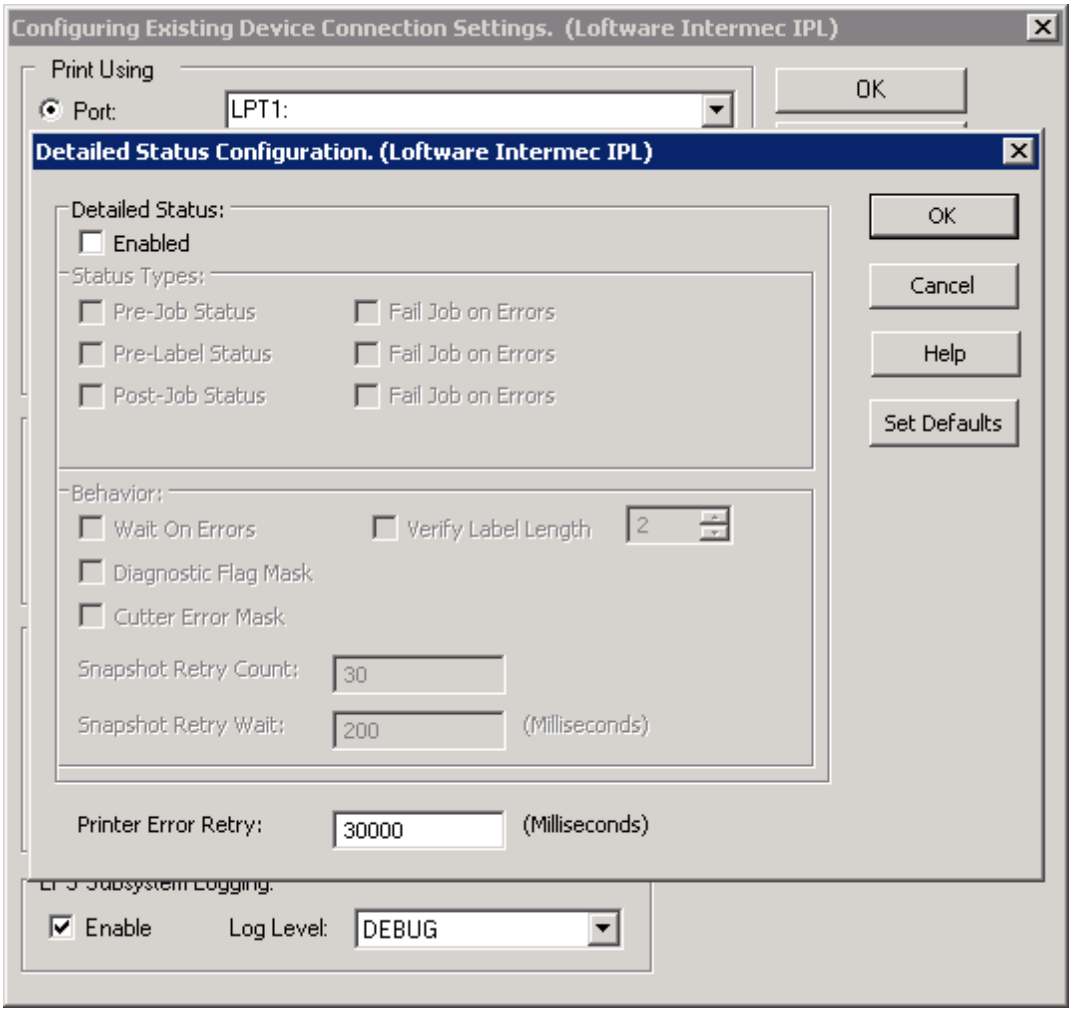


Figure 2.16: Detailed Status Configuration window

4. Click **Enabled**, and select the **Status Types** and **Behaviors** to check.
5. Click **OK** to save the configuration, click OK again to save the connection settings.

Detailed Status Section

Select **Enabled** to turn on Detailed Status for the selected printer.

Status Types Section

Status	Description
Pre-Job Status	Check the state of a printer before sending a print job - single label or many labels in a pass, csv, or xml file.
Pre-Label Status	Check the state of the printer before a label is sent.

Status	Description
Post-Job Status	Check the state of the printer after the print job is complete.
Fail Job on Errors	Set per status. Select to discontinue printing if there is a problem with the printer. **Note:** If you select **Fail Job on Errors** and you have enabled device notifications for only **Device Errors** on the **Notification's Dialog**, you will NOT receive notifications.

Behavior Section

Behavior	Description
Wait On Errors	Select **Wait on Errors** to have the system wait and retry a job until a printer error is fixed. For example, if a printer's head was lifted you would have the chance to fix the problem before the error was reported. This may be useful in an on-demand situation where an operator could easily see that there is a problem with the printer.
Diagnostic Flag Mask	Select **Diagnostic Flag Mask** if you set a printer to Diagnostics mode and you need to print to it for testing. This will allow the Detailed Status check to ignore the Diagnostic Flag Mask entirely if the printer reports this. **Note:** This option is only for printers that report the Diagnostic Flag mask.
Cutter Error Mask	Select **Cutter Error Mask** to ignore any cutter errors reported by printers that report cutter errors.
Verify Label Length	Select **Verify Label Length** to compare the printer's reported label length with the label that is about to print. Enter the percentage of allowed difference between the actual printer value and the expected value for the label.
Snapshot Retry Count	Set the number of times to attempt to retrieve a valid status (success or critical error) from the printer.
Snapshot Retry Wait	Set the amount of time to wait between Snapshot Retries. **Note: Snapshot Retry Count** multiplied by Snapshot Retry Wait can give you an estimate of the maximum amount of time that the detailed status check should take.

Printer Error Retry Setting

The Printer Error Retry setting allows you to configure the number of Milliseconds the Loftware Print Server waits to retry sending a print job after an error.

Set Defaults Button

Returns the Detailed Status Configuration window to its default state (disabled).

About Device Families

A Device Family is a manufactured line of devices. Loftware currently supports a number Device Families. See the Supported Barcode Label Printers under Technical Support for a list of supported devices.

Loftware is continually adding support for new devices (and device families). Changes in the device list are automatically reflected anytime you install or upgrade Loftware Label Manager.

Show/Hide Device Families

You may want to display only certain device families and hide others. Maintaining a shorter list of available devices can simplify procedures for:

- Adding new devices
- Reconfiguring your devices
- Assigning a target device for your label format

Select Options | Device Families from Loftware Design Mode menu to select device families to show or hide.

Figure 2.17: Setting Device Families to display

Note: All device families begin with "Loftware" so as not to be confused with third party drivers of the same name.

Related Information
For more information on Loftware's supported devices, refer to the Printers and Labels section of this guide.

Test Printing

In label design mode:

- Select File | Test Print
- Press (F9)
- Click the Test Print icon in the standard toolbar.

Choose which of the assigned printers you want to print from in the **Test Print** dialog box.

Errors and Warnings when Printing

If an error occurs when you try to print the label, read the following to discover the problem. Often, if you check to see that the Device is turned on, that the Print Head is down, and if you check your label design for errors, you may have a quick solution. If a warning message is displayed, you may not have to change the label design to print, but be aware that the label may not print correctly.

- Click **Label Options** displays the label specific options dialog box for this label.
- Click **Devices** to open the **LLM Device Configuration dialog** that lets you configure devices and set up device specific options.

Related Information
For more information on error and warning messages, refer to *the Test Printing Labels* section, and the device-specific error eessages in the *Printers and Labels* section.

Merging Label Formats from One Printer to Another

You may want to alter a label format to fit a different printer for a variety of reasons. The label may have been designed for one printer but now must be printed to a different printer, or the label may need to be printed to a variety of printers in different locations. Design it once and merge the format to fit different printers.

To merge the Label Format

1. Enter Loftware Label Manager Design Mode and open your label format.
2. Configure the new printer with Loftware Label Manager as described previously.
3. Under the File | Media Setup menu (or F5), change target printer manufacturer name and model to the new printer and click **OK**.

Fields on your label are merged to the new printer type. Fonts and barcodes convert to the nearest field correlation on the new printer type. If the two printers are very dissimilar, or if the printer resolutions are different, you have to make some minor adjustments to the label format.

A warning message is displayed alerting you to changes and possible conflicts.

Related Information
For more information on error and warning messages, refer to the *Designing Labels* section of this guide.

Network Printing

It used to be that Loftware users connected their thermal transfer barcode printers directly to their computers through a serial, parallel or USB port. Today, connecting the printers directly to the network is more the norm. There are several benefits to connecting the printers directly to the network:

- Devices can be shared by more than one application.
- Devices can be assigned TCP/IP addresses.
- Devices do not rely on computers and are therefore more likely to be online.

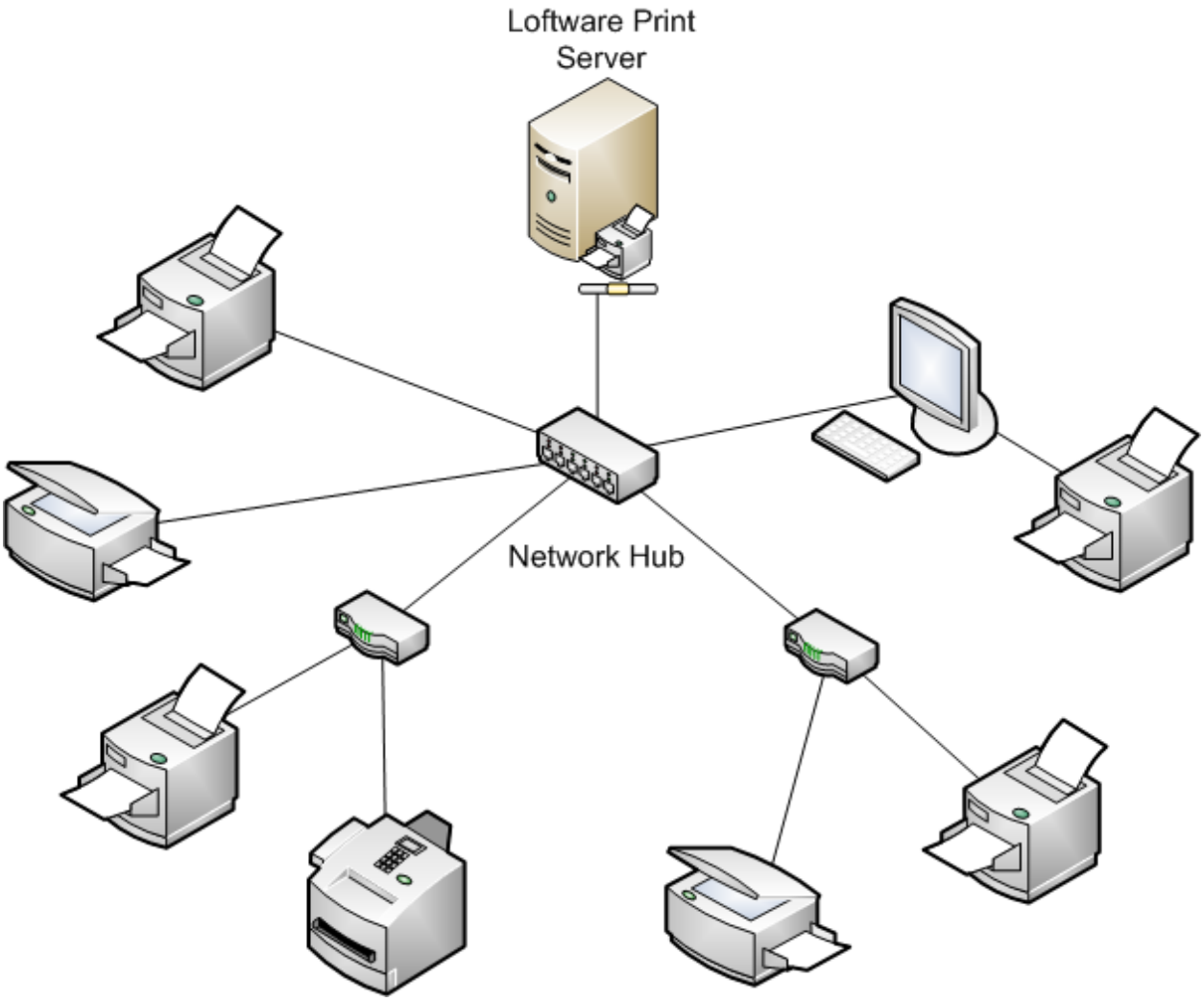


Figure 2.18: Thermal Transfer printers networked together

The figure above shows a typical printer network setup with printers connected to the network backbone using print servers. Print Servers typically resolve network data directed to a particular IP address into Serial, Parallel or USB output. Printers can also be connected as shared devices by attaching them to computers on the network. One problem with this technique is that the computer must be turned on in order to access the printer.

The discussions below describe how you can configure Loftware to drive printers that are attached to your network in various ways. The preferred method depends on whether you are running the Loftware Print Server or the Loftware Print Server Premier Edition.

Loftware Label Manager

Use the Direct Connection (Port) or **Print Manager/Spooling** option, and choose a Generic Driver that has been configured to point to a particular IP address. Do not set the IP address directly via the socket prompt as a printer failure causes the system to go into a five-minute timeout state.

Loftware Print Server and Loftware Print Server Premier Edition

Use the **Windows Sockets (WOSA)** option; supply the IP address AND raw port address.

Shared Printers vs. Print Servers

A shared printer is usually connected to a computer's parallel, serial or USB port and then made available to other computers on the network. The computer could either be dedicated to servicing print requests to the shared printer, or it could also be used for any other tasks that may be required (Client Workstation, File Server). Keep in mind that any other tasks occurring on the computer impact the resources available for printing, and vice versa. Shared printers can be accessed by Loftware Label Manager via Print Manager/Spooling.

> **Note:** The printer is only available as long as the computer it is connected to is turned on and connected to the network.

A print server is a device that is connected as a node on the network and has one or more serial, USB and/or parallel ports. Some print servers also have buffer memory, which allows them to queue print data if it is being received faster than the printer is able to handle. Using a print server allows the setup of numerous network printers that are not dependent upon any computer's resources. Print servers essentially give the printer an IP address that can be accessed by Loftware Label Manager via Print Manager/Spooling or Windows Sockets.

> **Related Information**
> For more information on sharing printers, refer to Sharing a Local Printer in this guide.

Setting up Print Server Devices

Print servers usually come with their own setup program that allows you to install the device on your system. The setup section is a general explanation of the necessary steps to install a print server; consult the documentation for your print server for specific instructions. Print servers are available from

Extended Systems, Intel, HP, and many others. You may have used them in the past to connect Laser printers to your network.

Note: Consult your Network Administrator before adding or removing any device on your Network.

- The setup program installs the appropriate drivers onto your computer.
- A configuration utility allows you to search your network for print servers, and assign each of them a unique IP Address and Name as well as other various settings.
- If you are going to use the Print Server with Print Manager/Spooling, when adding your Generic Text printer, choose either Local Printer or My Computer. When you are prompted to choose a port, you should see a choice that corresponds to the Print Server driver that you previously installed.
- If you are going to use the Print Server with Windows Sockets (WOSA), Loftware Label Manager requires two pieces of information: the IP Address and the Raw Port Address. In the Device Connection dialog box, type in the IP Address of your print server and the Raw Port address of the actual port on the print server where the printer is connected. The table below illustrates two examples of Raw Port Addresses for two different manufacturers' network print servers:

Extended Systems ExtendedNet T1000	**Raw Port Address**
Port 1	9100
Port 2	9101
Port 3	9102
Port 4	9103
Intel (3 port)	
Port 1	3101
Port 2	3102
Port 3	2501

Note: The Raw Port address can be obtained from your Print Server documentation or manufacturer.

Enabling Shared Network Printing

Whenever you are printing to the same printer from 2 or more installations of Loftware Label Manager or other applications, you must enable Shared Network Printing in the **LLM Device Configuration** dialog box at each of the Loftware Label Manager design mode installations. If you select **TCP/IP** or **Web User** in LLM Device Configuration, **Shared Network Printing** is automatically enabled. This ensures that labels being sent from one client do not corrupt other client's data. Formats and images are downloaded to the printer each time a label request is made. Therefore, Shared Network Printing may be considerably slower than other options.

Warning! Each Loftware Label Manager installation on the network that will be connected to a shared printer must enable the **Shared Network Printing** option. If it is not enabled, unpredictable results and possible loss of label formats and images may occur.

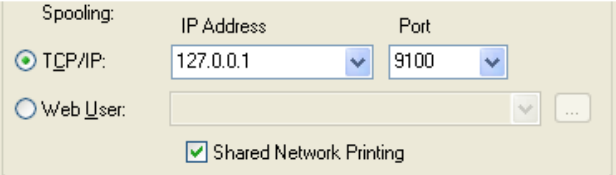


Figure 2.19: Shared Network Printing Enabled

Setting up Network Device Drivers

Adding a Local Generic/Text Printer Driver is only necessary if you want to connect your printer to your computer, and then either print to it using Print/Manager Spooling or share it so that others on the network can print to it.

Related Information
If you want to print to a printer that is installed elsewhere on the network, refer to *Network Printing* in this guide.

Adding a Local Generic/Text Printer Driver

1. Open the Devices and Printers Control Panel.
2. Click **Add a Printer**. The **Add Printer** wizard opens.
3. Click **Next**; select the **Local Printer** option, and then click **Next**.
4. Select the port where the printer is connected, and then click **Next**.
5. Scroll down the Manufacturers column and select **Generic**. Select **Generic/Text Only** in the Printers column. Click **Next**.

Note: If a dialog box appears explaining that a driver is already installed for this printer, choose the **Keep existing driver** option. Click **Next**.

6. Name the printer something besides Generic/Text. Click **Next**.

For example
Rename it using the Device Manufacturer and Model Number. Do not use LPT1, COM1, or USB as your name. Choose **No** when asked to use this printer as the default printer.

7. If you wish to share the printer, select Share Name and type in a name. Click **Next**.
8. Optionally describe the location of the printer and add comments in the next dialog. Click **Next**.
9. Choose **No** when asked to print a test page. Click **Finish**.
10. At this point, you may be required to insert the CD-ROM with the appropriate driver(s) on it or point to the drive or directory where the driver(s) is located. Complete the instructions in the dialog boxes.

11. If you chose a COM port, you should also complete the next steps, as you may need to configure the communication settings for the port.
    a. In the Printers folder, select the printer that you have just added.
    b. Select File | Properties, verify that the correct port is selected.
    c. Click the **Ports** tab. Click **Configure Port**.
    d. Verify that the settings for baud rate, parity, stop bits, and flow control match the printer's settings.
    e. After making any necessary changes, click **OK**. Click **Close**.

Note: Always use Xon / Xoff flow control.

Sharing a Local Printer

Sharing a printer is when rights or permissions are given to users to print across a Local Area Network (LAN), a Wide Area Network (WAN), the Internet or an Intranet to the printer which is local to the workstation or Network computer. If you are not sure you have rights to share a printer on your workstation, contact your Information Systems (IS) personnel.

Note: The printer is actually shared by the operating system, not Loftware Label Manager.

Some of the benefits of sharing a printer are:

- Each printer may be set for a specific label type (For example, dimension and specialty stock) and allow multiple personnel to print a range of print jobs without the need to change the media (label stock) or ribbon.
- Eliminate specialty equipment: Communication boards (multi-port parallel, USB and serial), print servers, and connectivity modules by connecting the printers locally to workstations then sharing them.
- Fewer printers: Multiple personnel can print to the same printer by spooling jobs to a shared printer.

Note: Printer sharing is available only to printers that are added locally.

Sharing a Local Generic/Text Printer Driver

1. Add a Local Generic/Text Printer Driver as described in the previous section if you have not already done so.
2. Open My Computer. Select Printers. Select the icon of the printer to be shared.
3. Select **Properties** command from the Printer menu.
4. Select the Sharing tab; choose the Shared As: option. If desired, the Share name may be changed.
5. Click **OK** when finished.

The printer is now successfully shared. If desired, leave the Printer dialog box up to monitor files as they are spooled to the printer.

Sharing a Network Device

A Shared Network Device is a device that resides on a Local Area Network (LAN), a Wide Area Network (WAN), the Internet or an Intranet, and has been made available for users on the network to print to. If you are not sure if you have rights to Shared Network Devices, contact an Information Systems (IS) representative.

The benefits of connecting to a network/shared device are the combination of Spooling and Sharing.

Note: Printer sharing is available only to printers that are added locally.

Connecting to a Shared Network Device

To connect to a shared network device:

1. From Printers and Faxes, select **Add Printer**. The **Add Printer Wizard** appears, and click **Next** from its Welcome screen.
2. Select the **Network** printer option. Click **Next**.
3. Specify the printer either by browsing for it or by entering its name.
4. Complete instructions in the dialog boxes.

Note: A Network Printer is a printer that is either connected to a server, to a workstation, to a network as a node, or to a print server.

You may be required to insert the disk with the appropriate driver(s) on it or point to the drive or directory where the driver(s) is located.

In Loftware Label Manager, a label is a design area on the computer screen where a label format is created or edited.

A label contains one or more fields. A field is a specific object within a label selected for editing. For example, you can select and edit a barcode field, a text field, a graphics field, a line field, a box field, or a paragraph field.

In Loftware Label Manager, you can add new fields to a label by using the Toolbox or **Insert** on the menu bar. To change a field's properties (the appearance of a field) you must first select it by clicking on it. When a field is selected, selection handles are displayed around the field and its properties/attributes are displayed in the **Properties** box, as long as the **Properties** box is visible.

This section describes designing labels with Loftware Label Manager. At its core, label designing is the process of adding fields to a label and setting the properties to match your label specifications. It covers:

- Using the Label Wizard in design view and changing the label options
- Creating a new label and understanding the **Properties** box
- Configuring label presentation and orientation
- Saving the newly created label to a label file
- Test printing the newly created label
- Viewing the On-Demand Print Form that corresponds to the label
- Completing a simple On-Demand print job for the new label

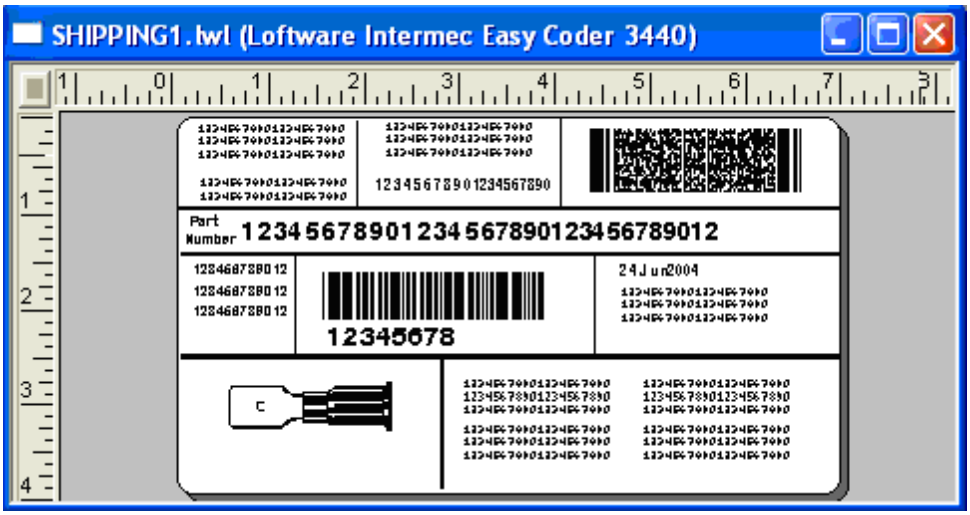


Figure 3.1: Freely mix Text, Barcodes, Boxes, Lines, Paragraphs, and Image fields on the label

Creating a New Label

The first time you open Loftware Label Manager after a new install, the **New Media Wizard** is displayed automatically. If you have created a label or tag previously in Design, the last label or tag that was edited or designed is displayed, unless this setting has been turned off in Options | Preferences.

The **New Media Wizard** guides you through the process of creating a label or an RFID Smart Label. It provides the option of starting with a blank label or selecting from a list of industry-specific label templates.

You will first choose the media type you want to create in the **Select Media** section of the wizard.

- New Label – Allows you to create a blank label ready for design.
- New RFID Label – Allows you to create an RFID Smart Label ready for design.
- Open an Existing Label - Allows you to open an existing Loftware document and edit the settings.

Note: Open an Existing Label is available the first time you use the New Media Wizard. By default the next time you open Loftware Label Manager design, the label that you last used will be opened. You can change this behavior in Options | Preferences | Design Options.

The next windows that appear depend on the type of media you had selected to create.

The Toolbar Icon

Clicking the **New** icon on the Loftware Label Manager toolbar opens a blank label (4" x 6" default). If you have previously created a label, the new label is automatically attached to the last device for which you designed a label.

Creating a New Label using the New Media Wizard

The **New Media Wizard** guides you through the process of creating a label or an RFID Smart Label.

1. Open Loftware Label Manager by selecting Start | All Programs | Loftware Labeling | Design32.
2. Select File | New. The **New Media Wizard** appears. From the Welcome screen, click **Next**.
3. Select Media.
   - To create a standard label, select **New Label** from the **Select Media** section.
   - To create an RFID Smart Label select **New RFID Label**. Follow the instruction in Creating RFID Smart Labels.
4. Click **Next**. The **Template Type Selection** page appears.

5. Select a Template Type.
   - To create a label from scratch, select **Blank Label**.
   - To pattern your new label after an existing industry-specific label template, select **Compliance Template Label**. Follow the instructions in Using an Industry-Specific Label Template.
6. Click **Next**. The **Device Selection** page appears.
7. Select the device **Manufacturer** and **Model** from the drop-down lists.
8. Click **Next**. The **Field and Media Selection** page appears.

Note: If you select a printer that has not been configured, you will be reminded later when you select label options from File | Media Setup.

9. Select a field list from the **Field and Media Selection** field.

Note: In the **Field List Selection** field, the default **None** is the only choice unless there are any LLMFIELD [.lst] files in the main Loftware folder. LST files provide a means of constraining the field names on a label to a pre-defined list. The LST file can also specify the maximum number of characters allowed for any of the fields. If .lst files are available, these are listed in the drop-down list.

10. Enter the **Width** and **Height** of the label stock in the target printer.

Note: As you change the dimensions of the label, the changes are reflected in the **Preview** section.

11. Set the orientation for this label. The default is 0º.
12. Click **Next**. The **New Media Wizard Summary** page appears.

A summary of your selections is displayed. If satisfied with your settings, click **Finish**. If you need to make changes, click **Back**.

Related Information
For information on .lst files, refer to Customizing your Labels in this guide.
For information on print orientation, refer to On-Screen Label Presentation in this guide.
For information on family drivers, refer to About Printer Family Drivers in this guide.

Using an Industry-Specific Label Template

Industry-specific label templates provide a quick starting point for designing a label.

To design a label based on an industry-specific label template:

1. Continuing from the **Select Media** section of the **New Media Wizard**, select **New Label**. Click **Next**.
2. Select a Template Type. From the Template Type Selection dialog, select **Compliance Template Label**. Click **Next**.

3. Select a Target Device. The **Device Selection** dialog prompts you to select the target device for the new label. Select the printer Manufacturer and Model from the drop-down lists, and then click **Next**.

Note: If you select a printer that has not been configured, you will be reminded later when you select label options from File | Media Setup.

4. Select a Label Template. In the **Select Template** section, select the industry-specific label template you want to use from the list. When a selection is made, a preview and a description of the template are displayed. Click **Next**.

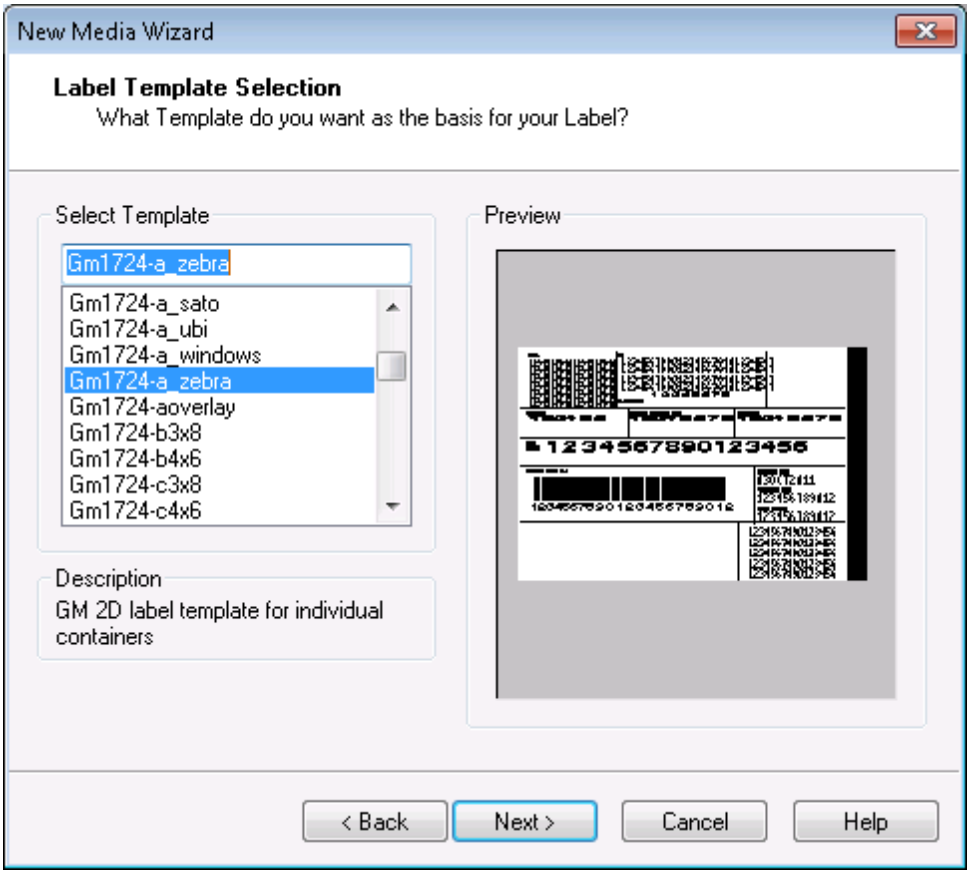


Figure 3.2: New Media Wizard dialog box with General Motors label template preview.

5. A summary of your selections is displayed. If satisfied with your settings, click **Finish**. If you need to make changes, click **Back**.

Note: If you have not configured the target printer for this label, when you access Media Setup (F5), a reminder is displayed.

Design Mode - Menu Bar, Toolbars, and the Toolbox

The Loftware design workspace provides several options and tools that facilitate the creation of labels. These include the menu bar, toolbar buttons for the most commonly-used operations, a toolbox with icons for fields that may be added to the label, rulers, a screen odometer and a resize indicator.

The Menu Bar

The menu bar, located at the top of the Loftware Label Manager main window, is similar to those found in other Windows applications. You can point-click-select menus or, you can access a menu from the keyboard by pressing **ALT** plus the underlined letter of the menu. For example, to access the **File** menu, press **ALT+F**.

Note: Since all Loftware Label Manager toolbars are dockable, their positions are given as the default relative position when you start the program.

Menu	Description
File	■ Create, open, close, and save label files, smart labels, or industry-specific label templates. ■ Test-print labels. ■ Import labels designed with LLM-DOS. ■ Import hardware data streams (Intermec IPL, Monarch MPCL II and Zebra ZPL). ■ Open the Device Wizard. ■ Obtaining device status. ■ Manage LPS users. ■ Set default properties for fields that will be added to the current label using.
Edit	■ Undo an operation. ■ Cut, copy, paste, or delete fields. ■ Edit field attributes or field data sources. ■ Rotate fields or rotate the entire label.
View	■ Display or hide Loftware Label Manager on-screen components, for example, the **Properties** box, the Toolbar or the Toolbox. ■ Switch views between Label Design and the On-Demand Print Form. ■ Activate the grid display. ■ Change zoom levels.

Menu	Description
Insert	Add the following ▪ Fixed text. ▪ Variable label fields. ▪ Barcode. ▪ Images. ▪ Graphic elements (for example, lines, boxes and borders). ▪ When enabled, an RFID field.
Position	Align, center, and evenly space two or more selected fields.
Options	▪ Change the application **Language**. ▪ **Preferences** allow you to change default configurations within the Loftware Label Manager system. ▪ Open the **RFID Calculator**. ▪ **Audit Setup**. ▪ You can select **File Locations**, **Layouts**, and **Device Families**. ▪ Use **Find Script** to locate the field that contains a script. ▪ Select screen displays (such as **Lock Tool**, **Align to Grid** or **Grid Settings**) ▪ Set the **Units** of measurement. ▪ Set the **Toolbox** position. ▪ Launch programs from other certified Loftware integration partners. ▪ Use **Sort Properties** to set the display order of fields on the **Properties** box.
Window	Arrange window displays when working on two or more label files at the same time.
Help	Information regarding Loftware Label Manager operations and specific help on a topic. The Loftware Label Manager version, serial number, license type and service pack number are found under Help | About Loftware Label Manager.

The Loftware Label Manager Toolbar

Toolbar

The Loftware Label Manager toolbar, located just below the menu bar, provides quick access to frequently used menu commands as well as a number of information windows.

Figure 3.3: Label Designer Dockable Toolbar

Following is a description of the toolbar buttons and controls (left to right):

Button/Control	Description
New	Opens a new blank label file.
Open	Opens an existing label file. Highlight a filename to display a thumbnail graphic of the label.
Save	Saves the active label in your system's memory to a disk or hard drive.
Print	Test prints a sample of the active label.
Cut	Cuts or deletes the selected field or fields from the label.
Copy	Copies the selected field(s) to the clipboard.
Paste	Pastes copied field(s) from the clipboard onto a label.
Grid	Displays / hides the grid format.
Switch Views	Switches views between the Label design screen and the On-Demand Print Form.
On-Demand Print	Opens the On-Demand Print Application.
Zoom Level	Choose from one of the preset zoom levels. Custom zoom levels are added by using the View | Zoom menu command.
Rulers	Fine-tune label formats quickly with Loftware Label Manager's horizontal and vertical rulers, which graphically display field movement and placement with complete accuracy. Click the ruler intersection (Label) icon to display the **Label Setup** dialog box.

To identify a toolbar icon, position the mouse arrow on the icon without clicking and hold it for approximately one second. A tool identifier is displayed. The toolbar display can be toggled on or off with the View | Toolbar menu command.

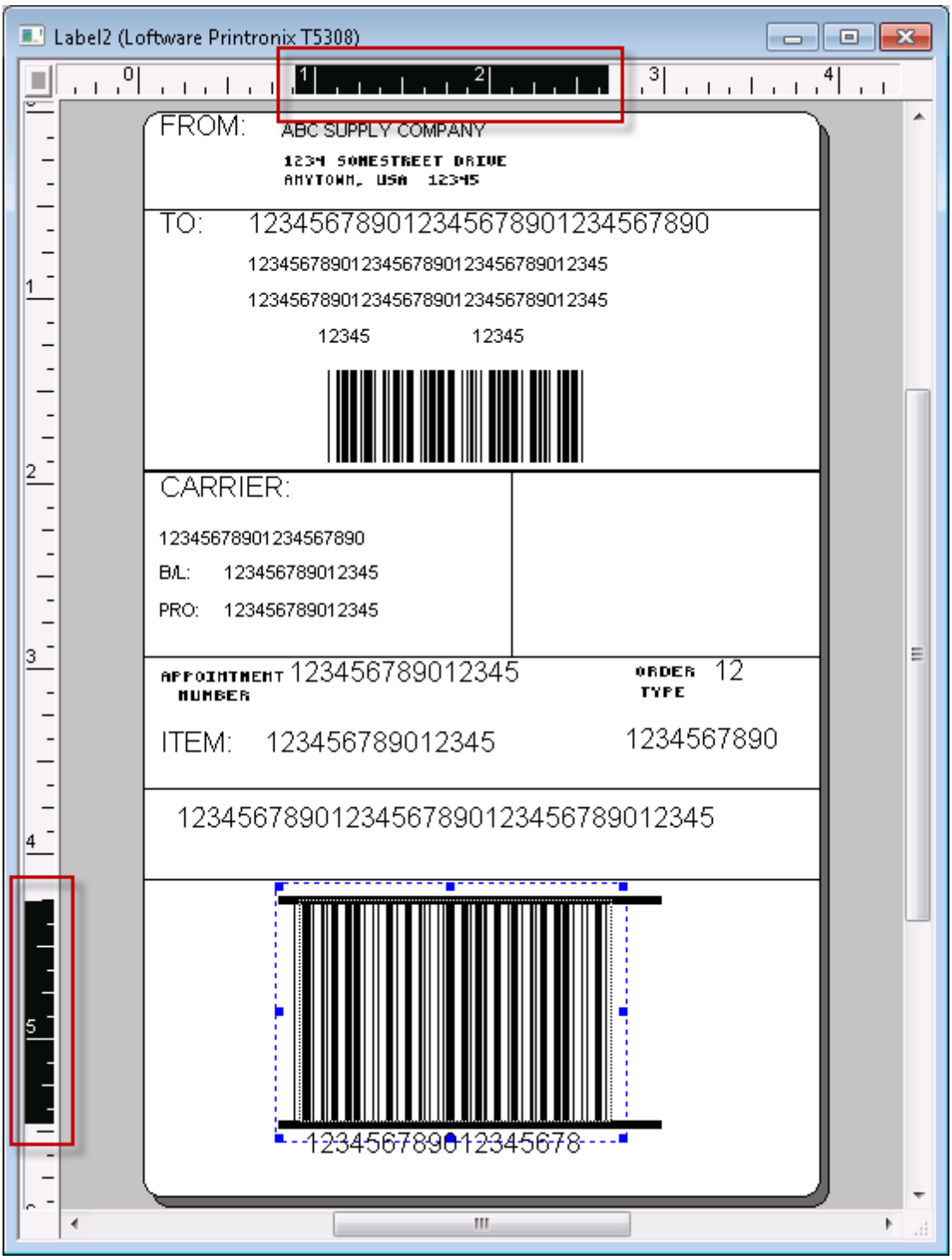


Figure 3.4: Rulers graphically display field movement and placement of objects

Screen Odometer

The screen odometer is located at the bottom of the design screen to the right of the license key information. The odometer pinpoints the precise location of the mouse pointer whenever you are designing or editing a label. When the mouse is moved, the reading on the odometer changes. When a field is moved by dragging it with the mouse, the odometer displays the position of the upper left corner of the field.

The first number indicates the mouse's pointer position on the label's horizontal axis (reading from the left); the second number reveals the arrow position on the vertical axis (reading from the top).

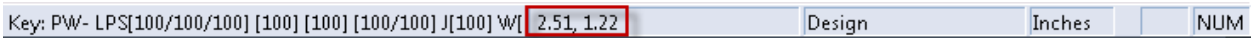


Figure 3.5: Status display showing Screen Odometer and License

The odometer helps to place fields in precise locations on the label, an important consideration if industry-specific labels are being produced. The Loftware Label Manager grid function can also help align label elements for industry-specific labels.

The default reading for the screen odometer is in inches. The default may be changed to centimeters, millimeters or screen pixels by selecting a unit of measure from the Options | Units menu.

Resize Indicator

The resize indicator box is displayed on the status bar. Whenever you resize a field, for example, a text or barcode field, the box identifies the resizing parameters, usually height and width, as well as the current measurements of the field.

As with the screen odometer, the default reading is in inches, but you are able to change to centimeters, millimeters or screen pixels by selecting a unit of measure from the Options | Units menu.

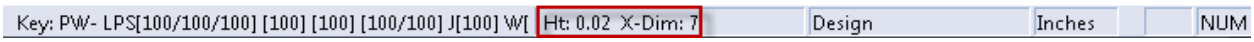


Figure 3.6: Status Bar showing Resize Indicator and License

Related Information
For information on the license string, refer to the *Loftware Print Server and Label Manager Installation Guide* section of this guide.
For more information on Label Setup, refer to the *Label Setup and Properties* section of this guide.

The Positioning Toolbar

The positioning toolbar is located just below the standard toolbar and features icons that help to align or position multiple fields simultaneously. This capability allows you to create columns, rows, and evenly spaced fields quickly. These tools are only available when two or more fields are selected. â

Figure 3.7: Label Designer Position and Editing Toolbar

Tool	Description
Align Left	Aligns 2 or more selected fields with the field that is farthest to the left on the label.
Align Right	Aligns 2 or more selected fields with the selected field that is farthest to the right on the label.
Align Top	Aligns 2 or more selected fields with the selected field that is nearest to the top of the label.
Align Bottom	Aligns 2 or more selected fields with the selected field that is nearest to the bottom of the label.
Center Horiz	Centers one or more selected fields horizontally on the label.
Center Vert	Centers one or more selected fields vertically on the label.
Space Across	Spaces evenly 3 or more selected fields horizontally (across) a label.
Space Down	Spaces evenly 3 or more selected fields vertically (down) a label.
Rotate Label	Rotates the entire view of the label 90 degrees clockwise. **Note:** This does not affect the printed label orientation.
Undo	The Undo icon cancels the last action performed, if the file has not been saved. The design application supports multiple levels of Undo.

A positioning toolbar icon may be identified by placing the cursor over the icon, (without clicking the icon) and holding it for about one second. A tool tip is displayed. Information about the icon is displayed in the Status Bar on the lower left side as well.

The position toolbar display can be toggled on or off with the View | Position Bar menu command.

The Loftware Label Manager Toolbox

The Loftware Label Manager Toolbox may be used to create fields on the label quickly. Select Options | Toolbox , the Toolbox may be placed on the left edge of the screen, the right edge of the screen, or the Toolbox may float.

The tools in the Loftware Label Manager Toolbox:

Tool	Description
Select	Select a field or a group of fields for editing.
Label	(Fixed Text) Add a text field that remains unchanged for all labels in a given print run, for example, a return address label.

Tool	Description
Text	(Variable) Add a text field in which the text changes from label to label during the print run, for example, a Customer Name field for an address label.
Line	Add horizontal or vertical lines to a label.
Box	Add a box to a label.
Paragraph	Add variable text fields that are automatically split and justified at appropriate word breaks.
Image	Add a graphic image (for example, logo) to a label. Available only if your printer supports graphics.
Barcode	Add a barcode field to a label.
RFID	Add an RFID chip and antenna to the label. This tool is only available when the target device for the label or tag is a Loftware-supported RFID device.

Note: To identify a Loftware Label Manager Toolbox icon, place the cursor over the icon (without clicking the icon) and hold it for about one second. A Tool identifier is displayed in the status bar at the lower left side of the window.

Language Options

Selection of the default language for Loftware applications (For example, Design, On-Demand, Range) is made during the original installation. However, there may be cases where the default language of Loftware applications needs to change with different users.

Example

The application language is set to English during installation. This has worked well for the person doing the installation, User A, the next logged in user, User B, and the third logged in user, User C. However, Users D, E, and F would like the language of the Loftware applications to be displayed in their native language, French. To change this setting for User D and the subsequent users, E and F in this case, perform the following steps:

1. Open a Loftware application such as the LLM. Start | All Programs | Loftware Labeling | Design 32
2. Select Options | Language.
3. Select **Français** (French) from the drop-down list.
4. Press and hold Ctrl, Shift and L simultaneously to display an added option on the dialog to set the selected language as the default language for new users.

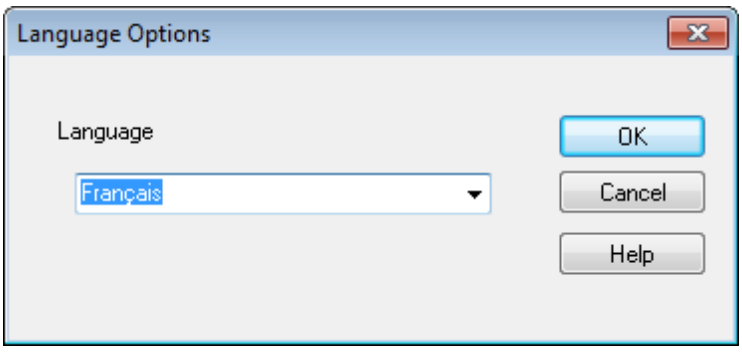


Figure 3.8: Language Options

5. Select **Set as default language for new users** .

This changes the default application language for Users D, E, and F to French, but it does not affect Users A, B, and C, whose application language remains English. This setting may be changed as often as needed, but each previous logged in user's settings are retained unless subsequently changed in the Options | Language menu.

About Properties

Properties are characteristics that define the appearance and behavior of the fields on a label. Properties that affect the appearance of fields include

- Font
- Point Size
- Barcode symbology
- Bar Height
- Input Prompt.

Properties, which affect the behavior of fields, include the data source (operator entry, database, incrementing field) and the data entry rules (must fill, numeric only).

Loftware Label Manager makes it easy to design and edit properties with the use of the **Properties** box.

Field Names

The name of the selected field is always at the top of the **Properties** box. If multiple fields are selected for editing, this space is blank. You can also select a field for editing by clicking the drop down arrow on the right side of the field name window and choosing the name of the field you wish to edit.

Field Name Conditions

The following are conditions for naming fields.

- Names must start with a letter (Alpha). Subsequent characters can be alphanumeric. Non-alpha first characters are converted to the letter A.

- Non-alphanumeric characters (including spaces) after the first character are converted to underscores (_)
- A name can start with "$$" as long as the third character is an alpha.

- Names may contain dots (for example, customer.big); however, field names with dots cannot be used in formulas. For more information, refer to the *Data Sources* section.

Reserved Field Names

The following field names are reserved and will have the first character replaced with the letter A.

Reserved Field Names		
CopyFrom	left	pages
copies	linkchar	prtnum
codea	llmqty	prtname
codeb	llmdup	rpad
codec	lpad	right
fnc1	ltrim	rtrim
fnc2	mid	shift
fnc3	mod7	quant
fnc4	mod10	uccmod10
format	mod43	version
jobname	mod212	

Special Function Field Names

The following field name prefixes are used to identify fields with special functions.

> **Note:** There are other special function field names available to Loftware Technical Support and Loftware Professional Services.

DMFixSize - Used with Datamatrix symbols and Zebra printers. See the Loftware Knowledge Base or Loftware Technical Support for more information.

ptfield - Used for Pass Through fields. See Pass Through Fields in this guide for more information.

Device Tool Defaults

Use the Device Tool Defaults view of the **Properties** box to set the default values for the properties associated with each design tool in Loftware Label Manager Design for the duration of a design session. The defaults are set per printer.

To set the field Property defaults for a printer

1. Open or create a label designed for the printer type that you want to set defaults
2. Point to File | Device Tool Defaults, and select a field type.
   - Fixed Text
   - Text
   - Paragraph
   - Line
   - Box
   - Image
   - Barcode
3. Set the default values for each of the properties by selecting from the available values.
4. Click **OK** to save the defaults.

The Properties Box

The **Properties** box is a field editing and property display tool in the Loftware Label Manager Design application. It displays and allows you to change the properties for the field that is selected. Examples of properties include:

- Field name
- Field height and width
- Barcode symbology
- Font category
- Font size

The **Properties** box allows:

- Viewing the properties of the selected field(s) in the Label Design area.
- Directly editing the properties of the selected field(s).
- Editing multiple fields simultaneously, even fields of different types (for example, a text field and a barcode field).
- Editing is reflected instantly on your label.

From the **Properties** box, you can:

- View the current values for all the properties of the selected field and common properties when you select multiple fields.
- Edit the values of properties, one field at a time, or several fields simultaneously.

The **Properties** box is useful because you view changes on your label as you enter them in the **Properties** box. For example, if you change the height of a barcode in the **Properties** box, Loftware Label Manager adjusts the height of the barcode on your screen immediately after you press **Enter** or press **Tab** to move to the next property.

When you use the Edit functions (on the Edit Toolbar) or Design Tools to change the location or appearance of a field, the **Properties** box immediately displays the results of your changes.

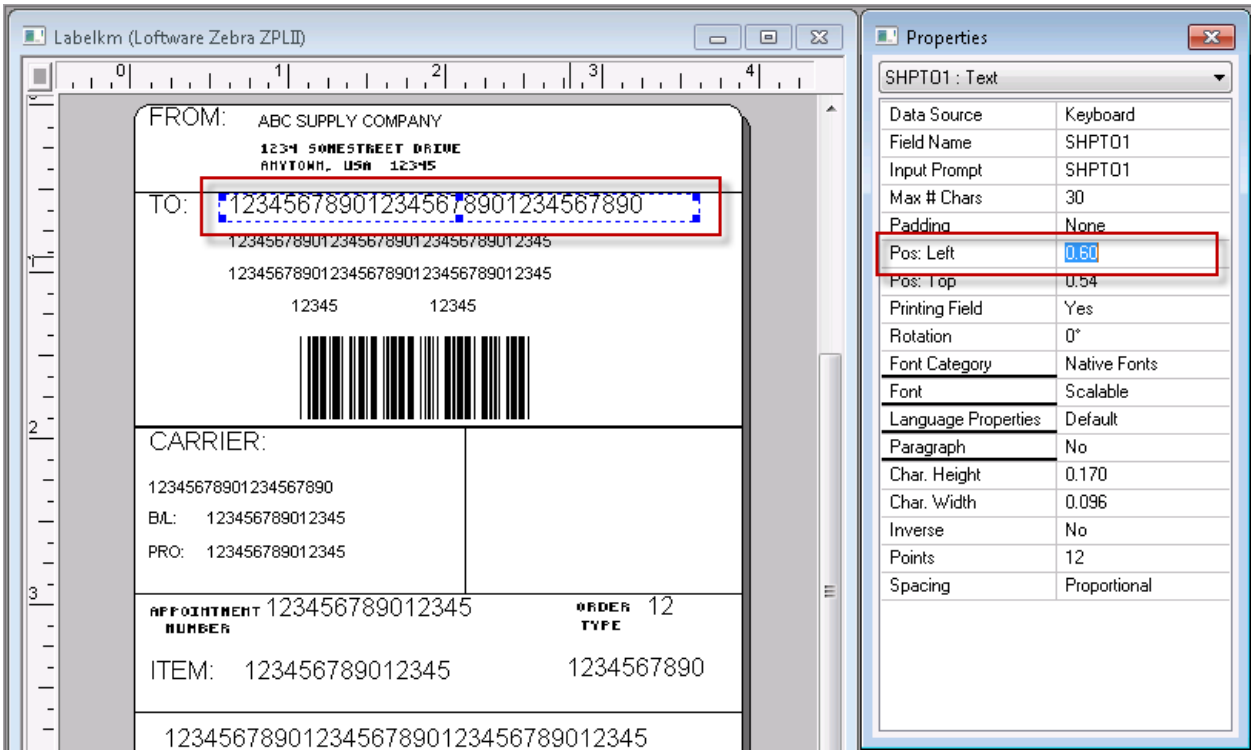


Figure 3.9: Selected Variable Text Field and corresponding Properties box

The **Properties** box is printer aware. The entries in the **Properties** box and the values that can be entered into those properties depend on the selected printer for the label. The **Properties** box reflects the capability of the printer for which you have chosen to design a label.

Note: The available symbologies vary depending on the selected printer.

Example

If your printer supports character rotation, the **Character Rotate** property is displayed in the **Properties** box. If the printer does not support rotated characters, the property is not displayed in the **Properties** box.

The available sizes at which you can print barcodes match the resolution (dpi) of the selected printer.

Displaying the Properties Box Window

You can display the Properties box in a window that floats on top of your labels. When the **Properties** box is open, the properties for the selected field or fields are always visible and you can interactively edit

one field or multiple fields.

Use the View | Properties menu command to display (or hide) the **Properties** box.

- The Properties box window is displayed wherever it was last positioned, even after exiting Loftware Label Manager and returning for another session.
- To move the **Properties** box, click the window title bar and drag the box to the desired location.
- To re-size a **Properties** box, move the cursor along the frame of the **Properties** box until the resize cursor is displayed, click and drag the edge in the direction indicated by the resize cursor. This can bring properties that have been truncated into full view.

Sorting the Properties Box Field List

You can sort the order fields are listed in the **Properties** box drop-down field.

1. Open the **Properties** box.
2. Select **Options** | **Sort Properties** or right click on the **Properties** box field list, and select a sorting option.
   - Name | Type
   - Name | Type | Data Source
   - Name | Data Source | Type
   - Data Source | Type | Name
   - Data Source | Name | Type
   - Type | Data Source | Name
   - Type | Name | Data Source

The field selection drop down changes the order fields are listed.

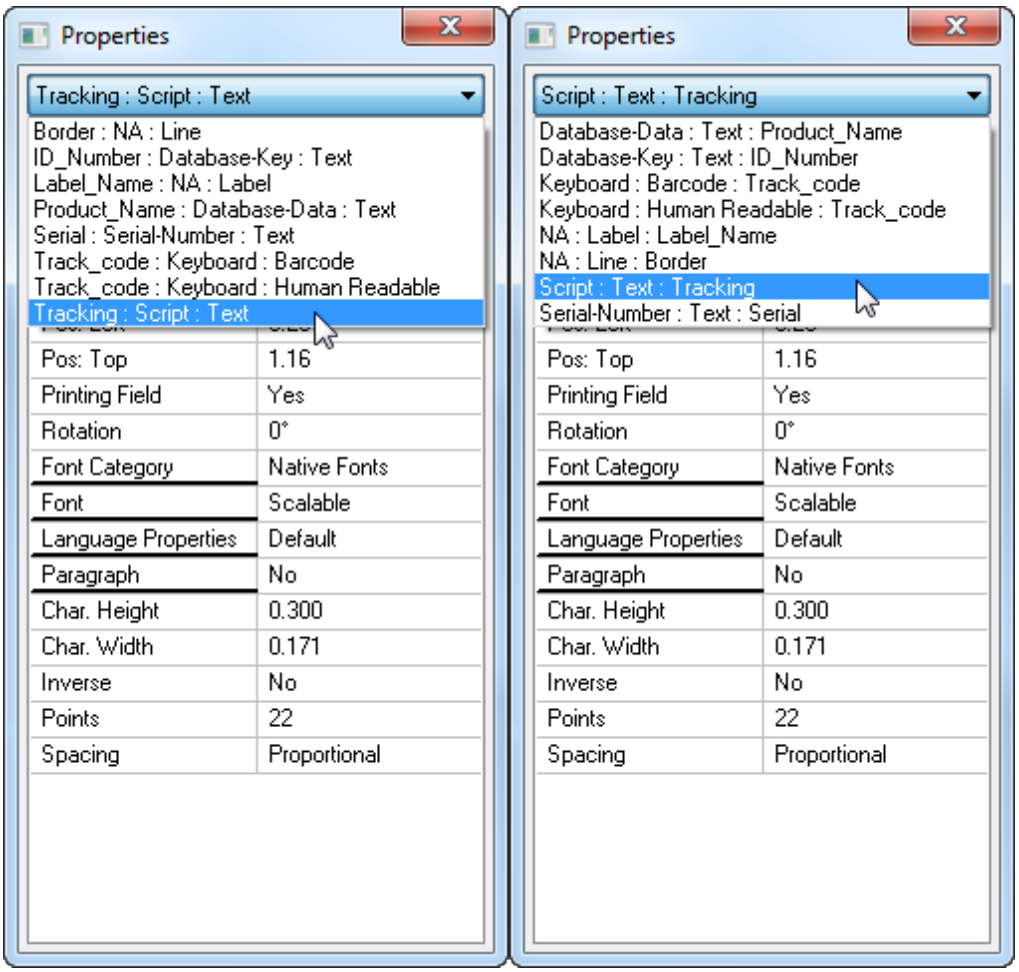


Figure 3.10: **Left**: Field list sorted by Name | Data Source | Type **Right**: Field list sorted by Data Source | Type | Name

Independent and Dependent Properties

Properties: Above and Below the Line

When you are working in a text field or a barcode field, a bold horizontal line is displayed roughly in the middle of each **Properties** box. This line separates the independent properties from the dependent properties.

Independent Text Field Properties

The properties displayed above the first bold line describe independent data. These properties are common among all text fields. Note that the last entry above the line is **Font Category**.

Dependent Text Field Properties

The properties displayed below the fourth bold line describe dependent data. These properties are dependent solely upon the font style listed above the line and describe characteristics that are unique to that particular font. When you select a different font, the dependent properties change automatically to

match the characteristics of the new font.

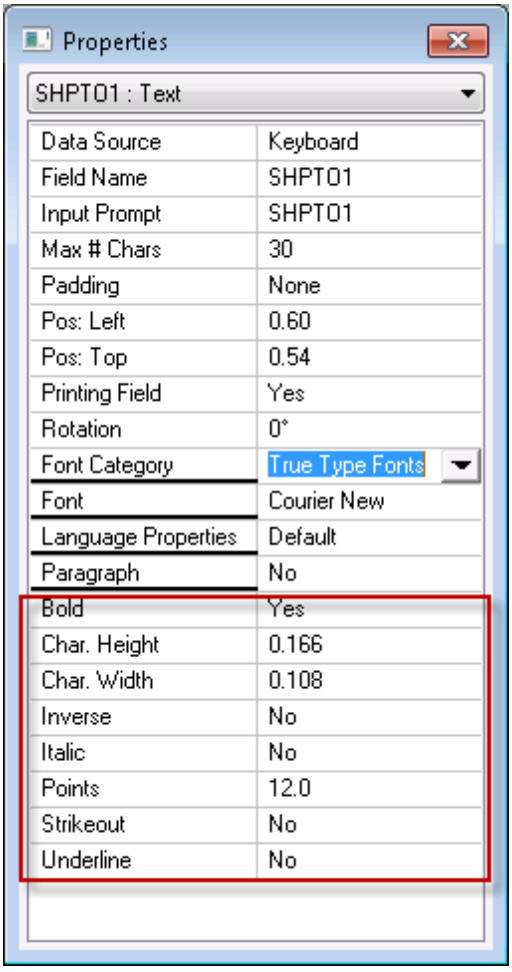


Figure 3.11: Independent and Dependent properties in a text field.

Independent Barcode Field Properties

The properties displayed above the bold line are common among all barcode fields. Note that the last entry above the line is Symbology.

Dependent Barcode Field Properties

The properties displayed below the line are dependent upon the barcode symbology that is selected from the **Symbology** field. Dependent properties are unique to a particular symbology. When you select a different symbology, the dependent properties change automatically to match the characteristics of the new symbology.

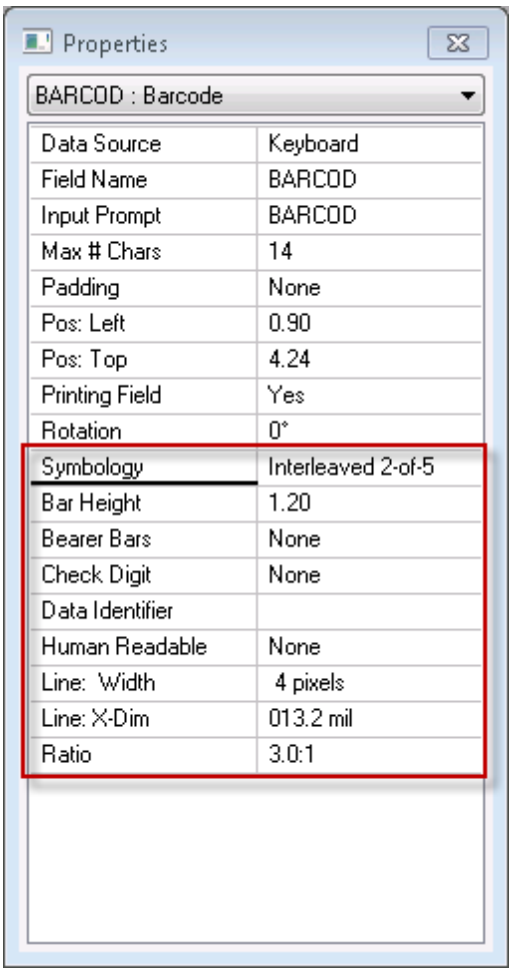


Figure 3.12: Properties Box for a Barcode field with Dependent Properties Outlined

Note: The horizontal line is displayed only in Properties boxes for text fields and barcode fields. Lines, boxes and images do not have dependent properties.

Non-Printing Fields

At times, you may want to create a field that does not print on the label, but is seen by a user in the On-Demand-Print Form.

Example 1

You have certain label printing instructions that you want seen by the operator keying in the label information, but this information is not printed out on the label.

Example 2

You have a key field that draws from a database, but does not need to be printed on the label.

Example 3

You are printing labels and want to switch the Input Prompt to be displayed in an international language to assist the operator.

Non-Printing fields may be created in two ways:

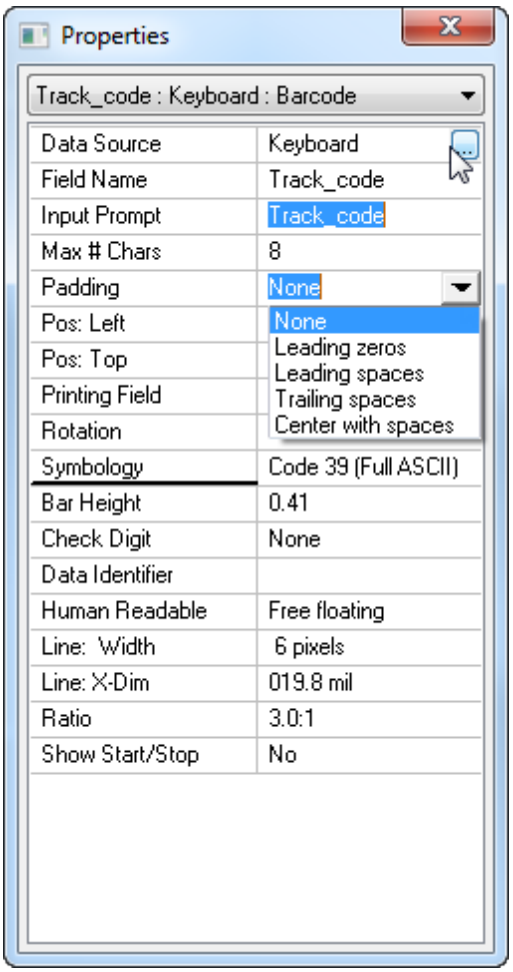
- You may select **No** from the **Printing Field** property in the **Properties** box.
- Fields created in the On-Demand Print Form Window are non-printing fields.

Related Information

For more information and examples of non-printing field use, refer to the *On-Demand Printing* section of this guide.

Editing the Properties of a Field

1. Select the field you need to edit.
2. From the **Properties** box, select the property you need to edit. The current of the property is displayed in the editing window.
   - If a drop-down field is available, select from the list to make the desired changes.
   - If a browse button (...) is displayed, click it to access a dialog box with more settings.
   - If neither a drop-down field nor a browse button (...) is displayed for a field, you can begin typing immediately to enter the appropriate value.



Properties box with browse button, edit field, and drop-down field selected

Properties Box Options

Padding

Loftware Label Manager Design provides the Padding setting in the Properties box for adjusting the location of the information in the text field on the label.

Setting	Description
None	Default option, whereby the characters begin on the left side of the field.
Leading zeros	Zeros fill in all unused character spaces before the first character of the field. **Example** The Max # Chars in the Ship_To_Name field equals 22, and the entry name for this field is 6 characters long. With the Leading Zeros option chosen, there are 16 zeros printed before the 6 character company name.

Setting	Description
Leading spaces	The result is the same as outlined above, only instead of zeros, there are spaces before the name in the field.
Trailing spaces	The result is similar to the previous option, except that the spaces are inserted after the name rather than before.
Center with spaces	This option centers the text in the field.

Center text in the field

1. Click **Padding** and the drop-down box to view the options:

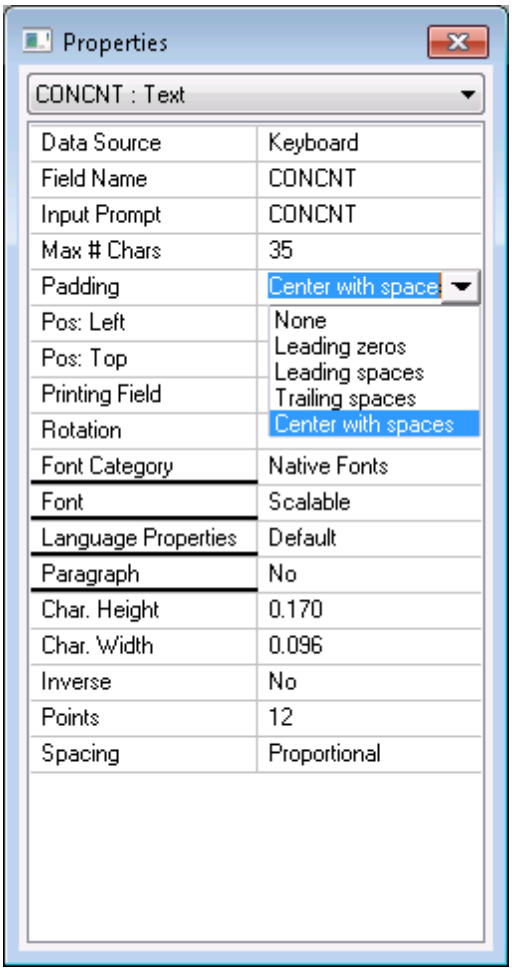


Figure 3.13: Properties Box displaying Padding Options

2. Select **Center with Spaces** from the list.

When printed, this field is centered on the label; however, there are some finer points to keep in mind. In the example, the maximum number of characters (Max # Chars) for this field is 22, and the Ship_To_ Name for this label has only six letters (ABCDEF).

Loftware Label Manager subtracts the number of characters in the field (6) from the Max # Chars, (22), and divides the remainder (16) by 2 (8). Thus, in this case, the field is printed with 8 spaces, followed by the Ship_To_Name (6 letters), followed by 8 more spaces. The Ship_To_Name is centered precisely in the field. This works great if the result of the subtraction of the Max # Chars from the number of characters in the field is an even number. However, if the result of the subtraction is an odd number, then the division by 2 results in a remainder. Since Loftware Label Manager does not adjust text in half-space increments, an odd number creates a centered field that is one space off. The next figure displays the printed results of two labels with an odd and an even number of characters.

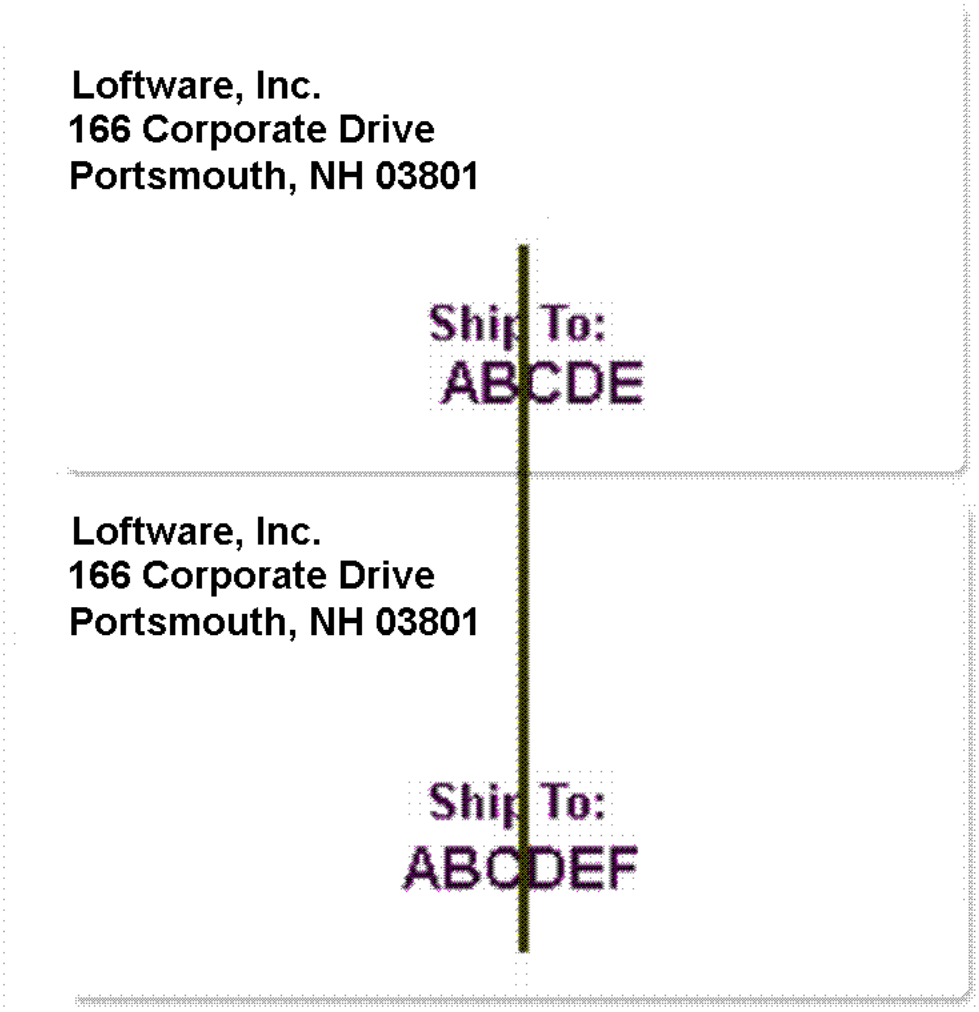


Figure 3.14: Labels utilizing the padding centering option.

Note: The information in the field is not shown as centered when displayed in Print Preview; however, it does print as specified.

More about Centering

The centering of text is dependent upon the type of font chosen, and the printer you are using. Some fonts are Proportional, while others are Monospace.

Proportional Fonts – A Proportional font is one in which each character is a different size. The spacing is proportional to the character size. For example, five W's take up much more space than five i's.

WWWWW

iiiii

Monospace Fonts – All Monospace fonts are evenly spaced. Using the previous example, the W's and the i's take up the same amount of space.

WWWWW
i i i i i

The Center with spaces option in Padding only works with any accuracy with Monospace Fonts. Since the Center with spaces option is based upon the number of characters as opposed to the physical width of the field and characters, attempting to use centering with Proportional Fonts creates unpredictable results. The only way to know for sure whether or not a font is Proportional or Monospace is to print with it. (Do not rely on the view on your screen.) Even though you may be able to choose one of these options from the 'Spacing' property in the Properties box, the font itself or the printer may not support the option you have chosen. Thermal Transfer printers generally have proportional fonts. A visual example follows using TrueType fonts:

Courier New is a Monospace Font. In the figure below, the top field has 20 Max # Chars, Padding set to "None", and 20 W's typed into the On-Demand Print Form. The next field also has 20 Max # Chars, Padding set to Center with spaces, and 4 W's typed into the On-Demand Print Form. The results are seen as quite accurate; as the text in the second field is well centered:

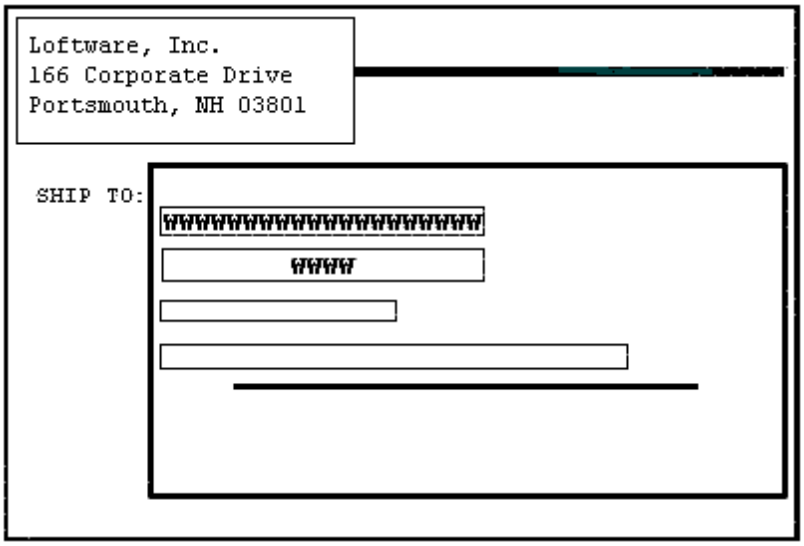


Figure 3.15: Courier New font with Center with Spaces Padding Option in 2nd Field

If the font is changed to Arial; a Proportional Font, and the same Padding options as well as the same typing is used, the result is a field that is not centered correctly:

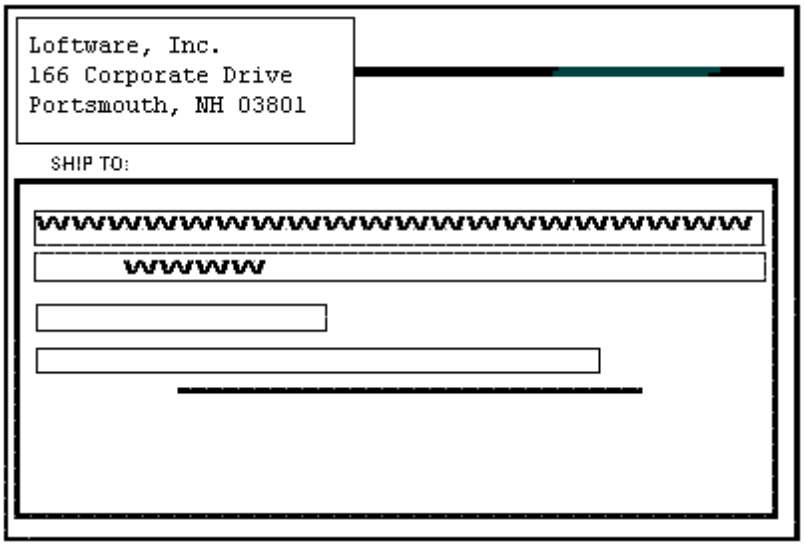


Figure 3.16: Arial font with Center with Spaces Padding Option in 2nd Field

It is to your advantage to experiment with centering using your particular printers, and using various fonts, to see what combinations work best in your application.

Edit a Barcode Field Using the Properties Box

There are a variety of ways to edit label fields. To help you get started, two examples follow. Both examples use the same label; so after completing Example 1, proceed directly to Example 2.

> **Note:** Before proceeding with the example, make sure the **Properties** box is visible. If it is not visible, use View | Properties to show it.

Example 1: The Barcode Field

Follow these instructions to:

- Create a new barcode field.
- Assign a name to the field.
- Set maximum character length for the barcode.
- Change the barcode line width.
- Change the X-Dimension (length) of the barcode.

Create the Barcode

1. Click the Page Icon to open a new blank Loftware Label Manager label screen.
2. Select the barcode icon from the Loftware Label Manager Toolbar.
3. Position the mouse indicator near the upper left-hand corner of the label.

4. Click and drag in the label design area (down and to the right) until the field outline box is approximately 1/2" high and 2" wide, release the left mouse button

Note: A Code 39 barcode (the default symbology) is displayed on the label. All dependent properties (below the bold line) are thus characteristics of Code 39.

The selection handles show that the new barcode is selected automatically.

Change the Properties of the Barcode

Give the field a meaningful name

1. Select **Field Name** in the **Properties** box.
2. Type "PART NO."

Set maximum number of characters for the barcode

1. Select **Max # Char** in the **Properties** box. The default setting is 8 characters.
2. Type "15."

This sets the barcode's maximum number of characters to 15. Both the barcode itself and the adjacent human-readable text reflect this change.

Change the X-Dimension

1. Select **Line: X-Dim** in the **Properties** box.
2. Select the options arrow in the text box.
3. Select a new value for **Line: X-Dim**.

Note: Changing the X-Dimension also changes the Line Width property. **Line Width** and **X-Dimension** are two different ways of viewing the same property. For UPC/EAN barcodes, the **Properties** box also features **Line: % Nominal**, another way to view the line width of the barcode.

Note: If the barcode you have created does not fit on the label, try setting the rotation to 90º.

Example 2: The Variable Text Field

When you created the barcode field in Example 1, you also created a human readable text field at the same time. Use the **Properties** box window to make changes to this field in Example 2. Follow these instructions to:

- Move the field to a new position.
- Change the font.
- Magnify the width of the field.
- Center the field

Move the Variable Text Field

1. Move the human-readable text field away from the barcode to provide more room while you edit the field.
2. Select the human-readable text field.
3. When the movement cursor is displayed, while holding the left mouse button, drag the field to a new position (slightly below its original position). Release the mouse button.

Note: You can also use the arrow keys on the keyboard to move fields. Multiple fields may be selected by holding down the Ctrl key on the keyboard as you select.

Change the Font

1. Select the variable text field, if it is not already selected.
2. Select **Font** from the **Properties** box.
3. Select the arrow in the text box; and then select a dot font from the list of options.

Note the change in the appearance of the font on the label.

Note: Dot fonts feature names such as 7 x 9 or 16 x 24.

Magnify the Width of the Human-Readable Text Field

You can magnify the width of the human readable field using the double-click function (a Loftware Label Manager shortcut feature). This option depends on your font selection.

1. Select Magnify Width from the **Properties** box. The default magnification is 1.
2. Double-click. Note that the width of the field on the label doubles.

Using Double-Click to change a Property Value

When you select a property that features a list of options, as indicated by a down-arrow in the editing window, you can double-click the left mouse button on the property name to advance the property to the next available choice.

Once you are familiar with the basic purpose, layout, and editing capabilities of the **Properties** box, it is easy to customize your labels.

Loftware recommends you practice manipulating fields using a variety of methods, including the **Properties** box as a way to develop a method that best fits your label design style.

Label Setup and Properties (Media Setup)

The Label Setup and Properties window or Media Setup is used to change the general design or your label.

Label Setup Tab

In the Label Setup tab, the Label Size and Orientation and Configure Label For sections present several options:

Label Size and Orientation Section

Option	Description
Width	The width of the label stock for this label.
Height	The height of the label stock for this label.
Print Orientation	At 0°, the label prints the same orientation shown on your computer screen. Setting Print Orientation at 90° rotates the label clockwise 90°. Other Print Orientation options are 180° and 270°.
Label Options	When the Label Options button is clicked, a dialog box specific to the selected printer is displayed. Make changes to these options as needed, and then click **OK**.

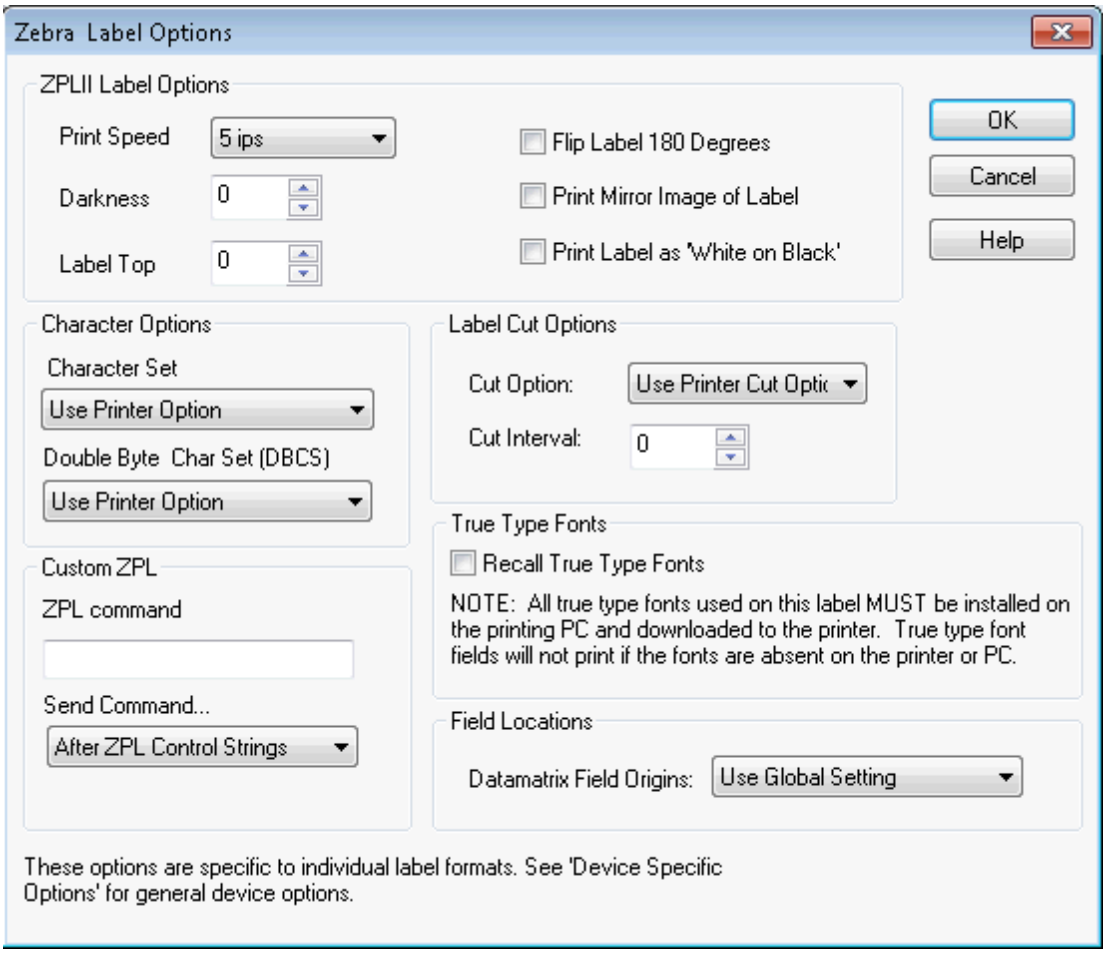

Zebra Label Options
ZPLII Label Options
Print Speed
5 ips
Darkness
0
Label Top
0
Flip Label 180 Degrees
Print Mirror Image of Label
Print Label as 'White on Black'
OK
Cancel
Help
Character Options
Character Set
Use Printer Option
Double Byte Char Set (DBCS)
Use Printer Option
Label Cut Options
Cut Option:
Use Printer Cut Optic
Cut Interval:
0
True Type Fonts
Recall True Type Fonts
NOTE: All true type fonts used on this label MUST be installed on the printing PC and downloaded to the printer. True type font fields will not print if the fonts are absent on the printer or PC.
Custom ZPL
ZPL command
Send Command...
After ZPL Control Strings
Field Locations
Datamatrix Field Origins:
Use Global Setting
These options are specific to individual label formats. See 'Device Specific Options' for general device options.

Figure 3.17: Label Options

Configure Label / Tag For Section

Option	Description
Manufacturer	Choose a device from the drop-down list to print this label.
Model	Choose from the models displayed in the drop-down list.
Resolution	For labels, the resolution at which the label prints. The available resolutions depend on the printer model chosen above.

If you click **OK** and the chosen device has not been configured for the label or tag, a warning message gives you the option of configuring the device. If you choose not to configure the device at this time, the Label Setup and Properties dialog box closes. If you choose to configure the device now, the LLM Device Configuration dialog box is immediately displayed.

Label Properties Tab

Select the **Label Properties** tab to display label / tag information.

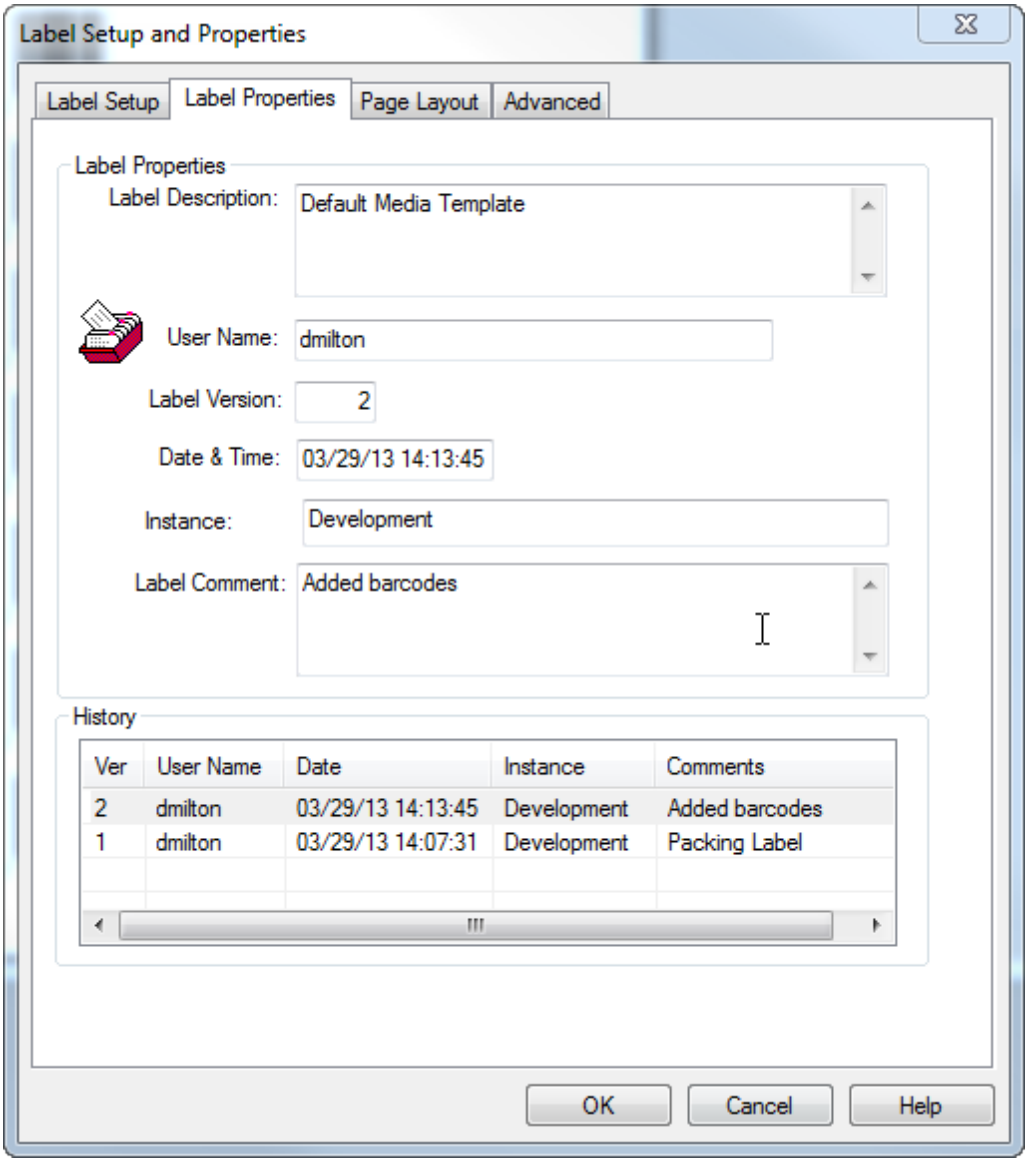


Figure 3.18: Label Properties Tab

Label Properties Section

Option	Description
Label Description	The label description gives you information about the type of label. If this is a blank label you chose in Step 1 of the Wizard, it is called a Default Label Template. If you chose to create an industry-specific label Template, such as a GM or UPS Template, the name, type, size and any other information associated with that label template is displayed.
User Name	This is the logged on user who created the label that is currently active. This is listed as "unknown" if this is a label carried over from a previous version of Loftware (prior to 6.1).
Label Version	The number of times the label has been saved. Each time this label is saved, the version number is incremented by 1.

Option	Description
Date & Time	The time the selected version of the label was saved.
Instance	The name of the installation environment that this label is configured for.

History Section

The **History** grid is not user modifiable. It provides a general record of who changed the label and when. A list of what was changed is not available.

Option	Description
Ver	The label revisions by number.
User Name	The name of the logged in user who created the label version.
Date	The date and time that the label version was created.
Instance	The installation environments that this label has been configured for.
Comments	This column displays any system comments or comments entered upon saving a label when **Allow Label Comments** is selected.

Note: Label Names are always saved with the created label. If you select File | Save As and change the name of the label, the history information of this label is removed and a message stating "New label created from old" is added in the Comments line.

Enable Label Comments

Select **Enable Label Comments** to make the **Label Comments** window appear when this label is saved.

Page Layout Tab

Select the Page Layout tab to define multi-up page layouts and associate those layouts with your label. If you are printing only one label per page, then this section does not have to be configured.

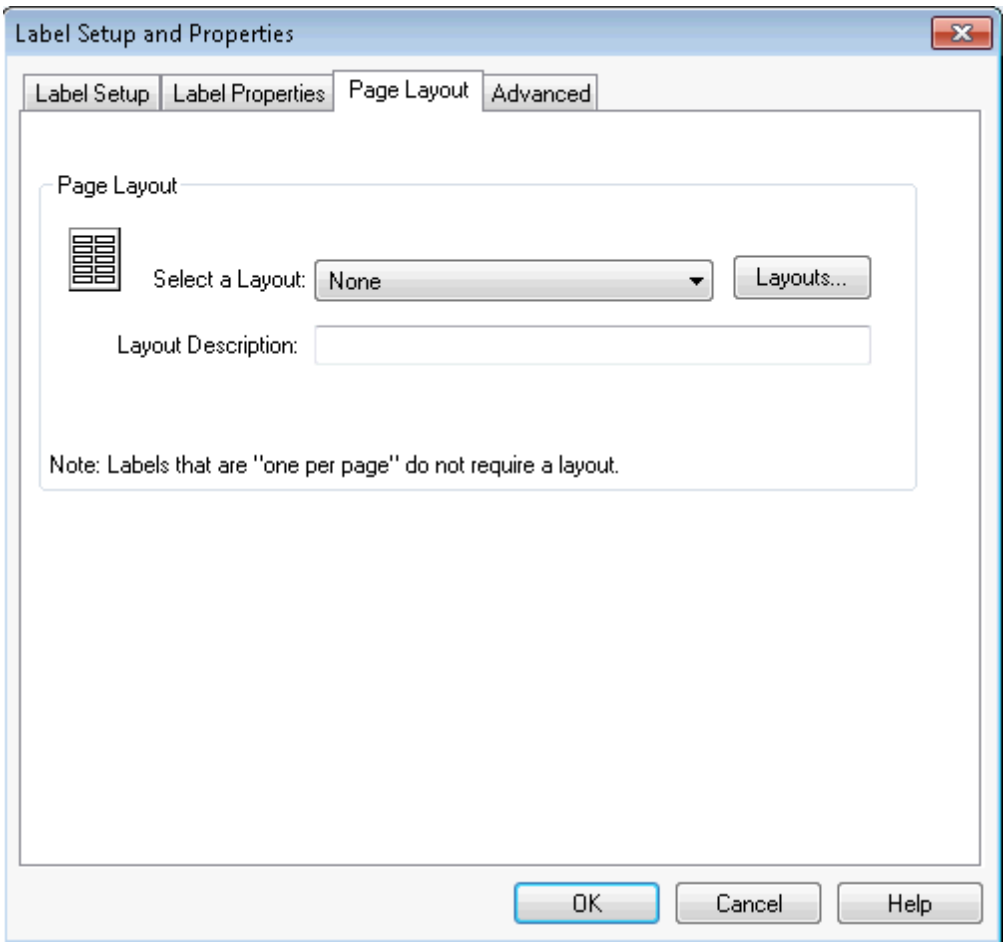


Figure 3.19: Page Layout Tab

Option	Description
Select a Layout	Allows you to select a Page Layout from a drop-down list.
Layouts	Accesses the Manage Layouts dialog box, where a page layout may be added, edited, or deleted.
Layout Description	Displays a description of the layout chosen in Select a Layout. **Example** Selecting 4Up displays "Print 4 Labels a Page" in the dialog box.

Advanced Tab

Select the Advanced tab to select a field list, if you have created any LST files, and change Legacy Settings for Installed Fonts, Memory, and X and Y coordinates.

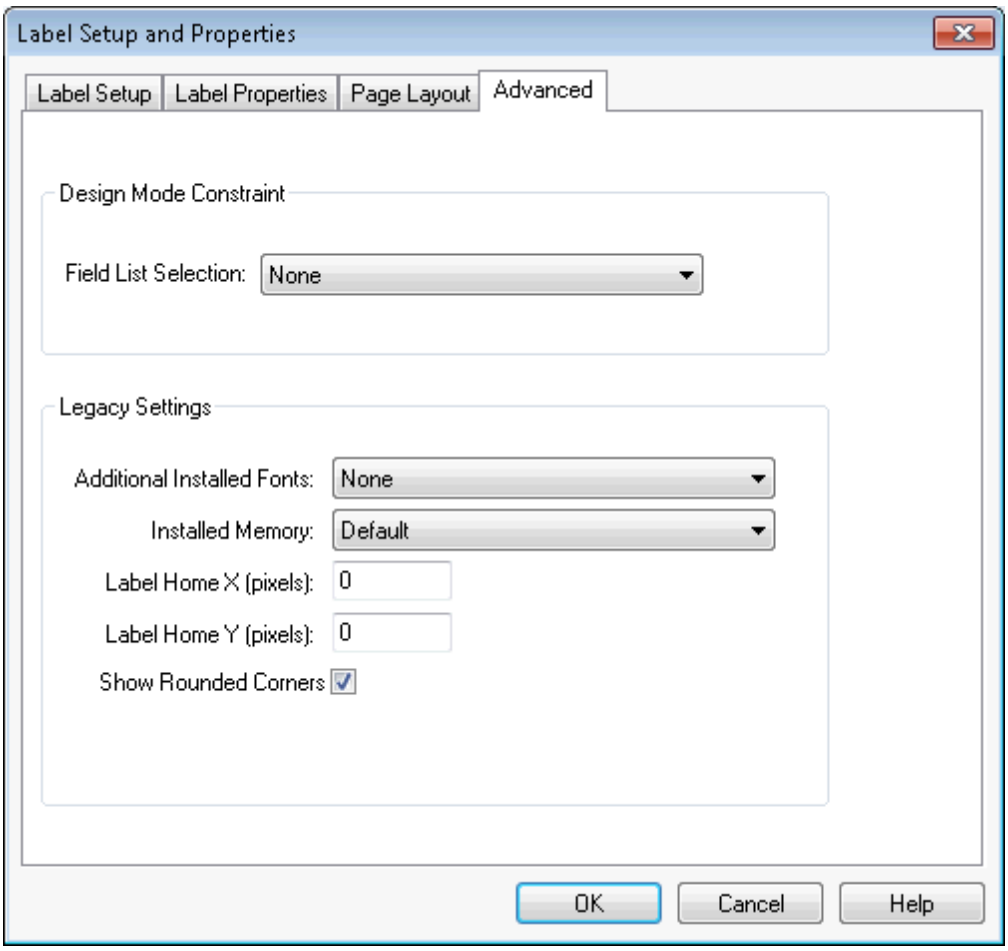


Figure 3.20: Advanced Tab in Label Setup and Properties

Design Mode Constraint Section

Field List Selection – If you have created any LST files, they are listed in the drop-down menu. Selecting a LST file constrains the field names available to the designer to those mentioned in the list.

Legacy Settings Section

Setting	Description
Additional Installed Fonts	This drop down box reflects any additional fonts that have been installed. The available fonts depend on the printer selected above. The default is None.
Installed Memory	This drop-down box reflects any additional memory that has been installed. The default is named Default, and the choices available depend on the printer selected above.

Setting	Description
Label Home X (pixels)	Adjusts the horizontal printed position of the label fields in pixels **Example** If the web of your label stock is wider than the label, then you may want to adjust this setting so that the label is printed entirely on the label, and not on the web.
Label Home Y (pixels)	Adjusts the vertical printed position of the label in pixels.
Show Rounded Corners	When checked, this option displays the label stock with rounded corners in Design Mode.

Note: The label fields do not change in design view, only in the printing of the label.

Related Topics

For more information on label options specific to Loftware-supported printers, refer to the *Printers and Labels* section in this guide.

For information on creating label fields, refer to *Field List Creation* in this guide.

For more information on creating LST files and constraining Label Design Mode, refer to *Customize* in this guide.

For complete information on adding or customizing page layouts, refer to the *Page Layouts* section in this guide.

Open the Label Setup and Properties (Media Setup) Window

With the label open in Loftware design mode, open **Media Setup**. There are multiple ways to open this window:

- Press **F5**
- Right-click on the label, and select **Media Setup**.
- Select **File** | **Media Setup** from the menu bar
- Click the label icon located at the intersection of the horizontal and vertical rulers.

The Label Setup and Properties dialog box opens.

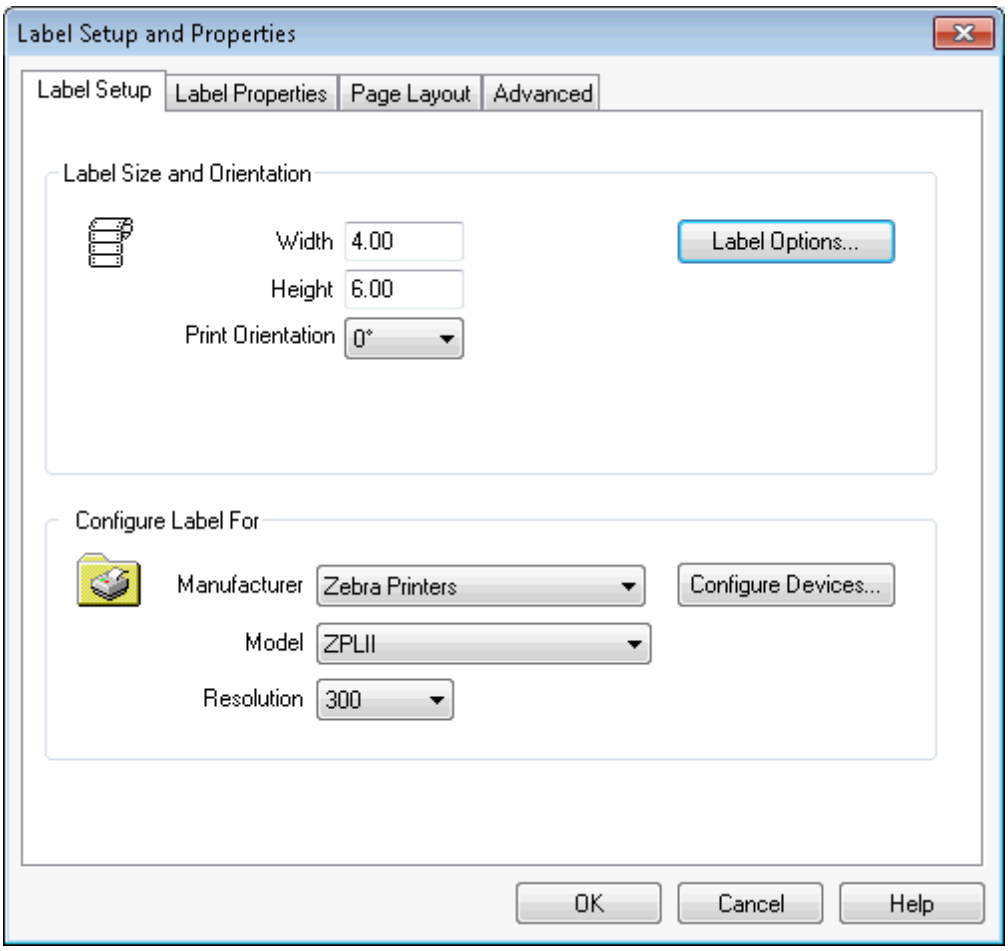


Figure 3.21: Label Setup and Properties dialog box

On-Screen Label Presentation

Loftware Label Manager includes the ability to design labels in one orientation and print them in another. For example, this methodology allows you to Design a 4 x 6 label with the 6-inch dimension displayed horizontally on the screen, and print the same label on a 4-inch printer rotated so the 6-inch dimension is vertical.

- Set the **Print Orientation** in the **Label Setup and Properties** window or Media Wizard.

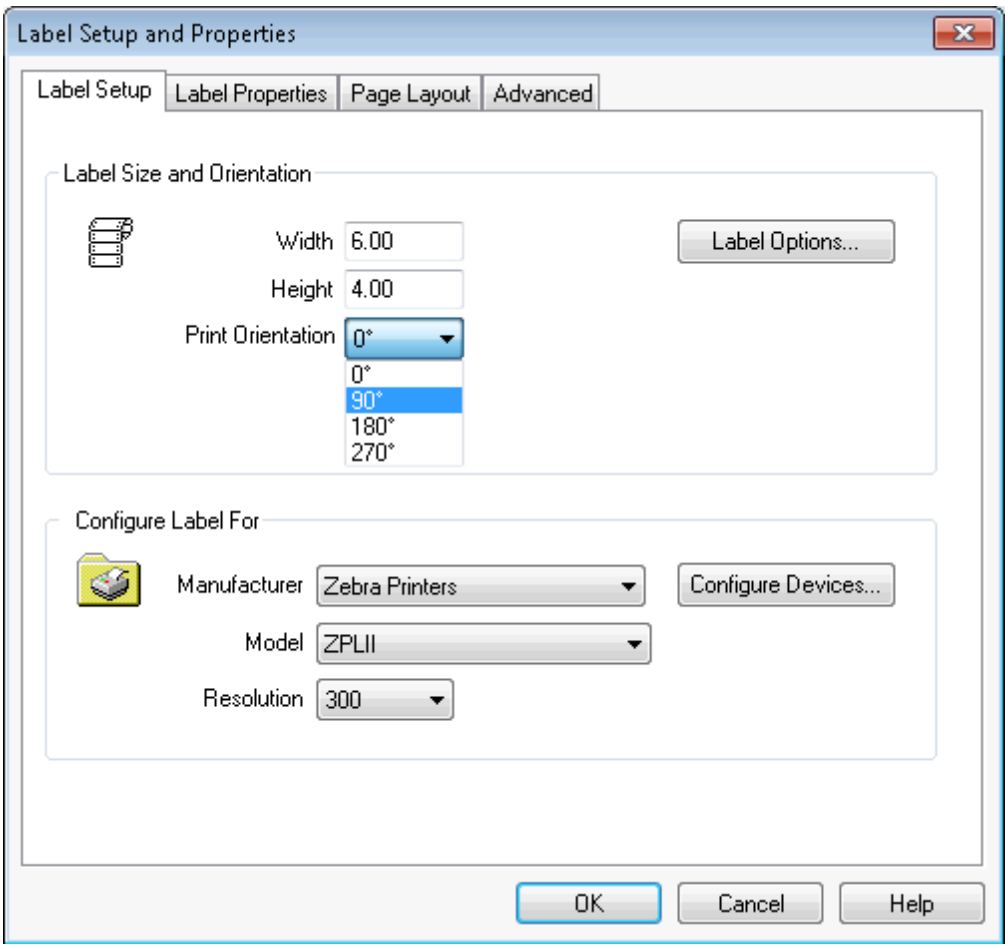


Figure 3.22: Label Orientation

Orientation Options

In the previous example, the label is designed right-side up, but printed clockwise at 90°. When would you use this option?

Example

If you are using a label with a color bar on one side of your label or a pre-printed label with a return address or logo, you may want to utilize the print orientation option in order to make designing the label easier, while printing it the way your stock dictates. Loftware Label Manager allows you to view the label with the fields such as text in a normal, readable position as you design, and print the label in a variety of orientations.

Note: At 0°, the label prints the same orientation as shown on your computer screen. Setting Print Orientation to 90° rotates the label clockwise 90° for printing.

Note: Clicking the Rotate Media icon does NOT change label print orientation; it only changes the label view, aiding in designing a label right side up. See example below.

Orientation Example

As described above, a pre-printed label is more easily designed right-side up and then printed rotated at 90° using the Print Orientation option. See following figure:

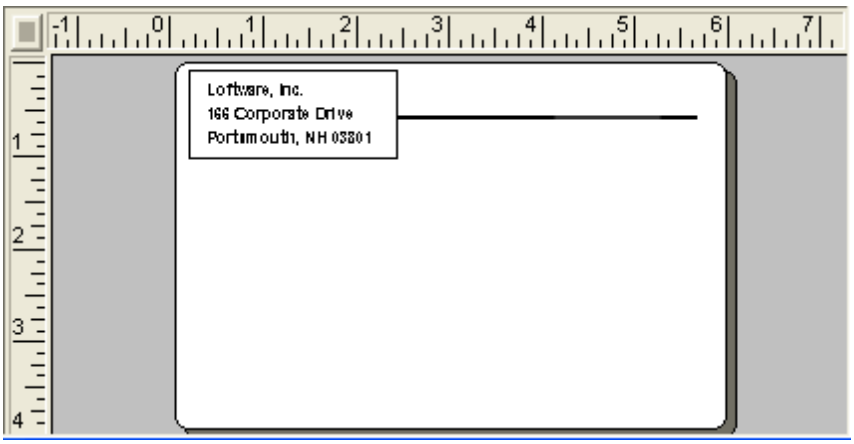


Figure 3.23: Pre-printed label ready to be designed right-side up.

When the label is presented, it is displayed vertically:

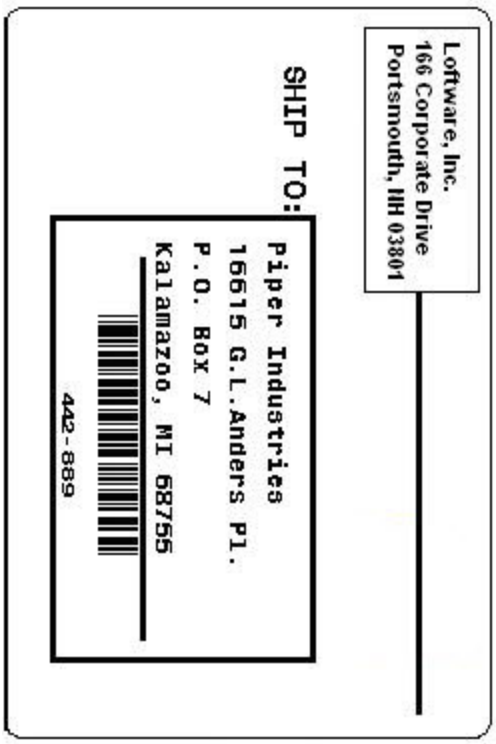


Figure 3.24: Previous Label as it is displayed when printed

Using Label Comments

The **Label Comments** window is used for entering descriptions of the changes made to a label. When you enable label comments, each time you save a label, the **Label Comments** window opens. This allows you to enter a comment about the changes made to a particular version of a label.

Each time you save a label a new version number is created. Your comments are associated with this version number.

When you save an existing label as a new label (**Save As**), a new label is created at version 1. The comment "New label created from old file "file.lwl"" is automatically associated with the new version. You can enter an additional comments when you save an existing label as a new label.

Enabling Label Comments

To require comments to be entered, you must first enable label comments from the Options | Preferences window. You can make entering comments optional.

Entering Comments

When comments are enabled, each time you save a label, the **Label Comments** window opens. Unless you have made comments optional, you must enter a comment before being able to save the label.

Promoting Labels

If you are using Label Versioning, the Label Comments window opens when you promote a label to a new instance. You can use the comments to describe the changes made to this version of the label. Previous comments will not be saved with the promoted label.

Viewing Label History

The **Label Properties** tab of the **Label Setup and Properties** window (**Media Setup**) has a **History** section that allows you to view the information about each version of a label, including any comments.

Opening Previous Label Versions

If you are using Label Versioning, the **Open** dialog contains a **Version History** table.

Auditing

When you use Global Auditing, you can include comments, version, user, and date/time information in an audit record.

Enable Label Comments

To allow comments to be entered for each version of a label, you must first enable Label Commenting in Options | Preferences. Label Comments can be used by themselves or as a complement to Label Versioning.

Require Label Comments

To require comments to be entered for each version of a label, select **Allow Label Comments**.

1. From Design, select Options | Preferences.
2. Expand **Design Options**.
3. Select **Allow Label Comments**, and clear the **Allow Empty Label Comments** checkbox.
4. Click **OK**, and click **OK** again to dismiss the restart message.
5. Restart Design to activate the changes.

Label commenting is enabled and required. Each time you save a label, the **Label Comments** window appears. You must enter a comment in the **Label Comment** field to enable the **OK** button, and save the label.

Enable Optional Comments

You may want to allow your users to save a label without entering comments. Allowing empty comments lets users save a label without having to enter a comment.

1. From Design, select Options | Preferences.
2. Expand **Design Options**.
3. Select **Allow Label Comments**, and select **Allow Empty Label Comments**.
4. Click **OK**, and click **OK** again to dismiss the restart message.
5. Restart Design to activate the changes.

Note: If the **Allow Empty Label Comments** option is selected, but **Allow Label Comments** is not selected, you will NOT be prompted to enter comments when saving labels.

Label commenting is enabled and optional. Each time you save a label, the **Label Comments** window appears. You are not required to enter a comment.

Enter Comments about a Label Version

When label commenting is enabled, the **Label Comments** window opens when you save a label.

Prerequisites

- Enable label comments.
- Design a new label, or open an existing label.

Enter Label Comments

1. Save a label. The **Label Comments** window opens.

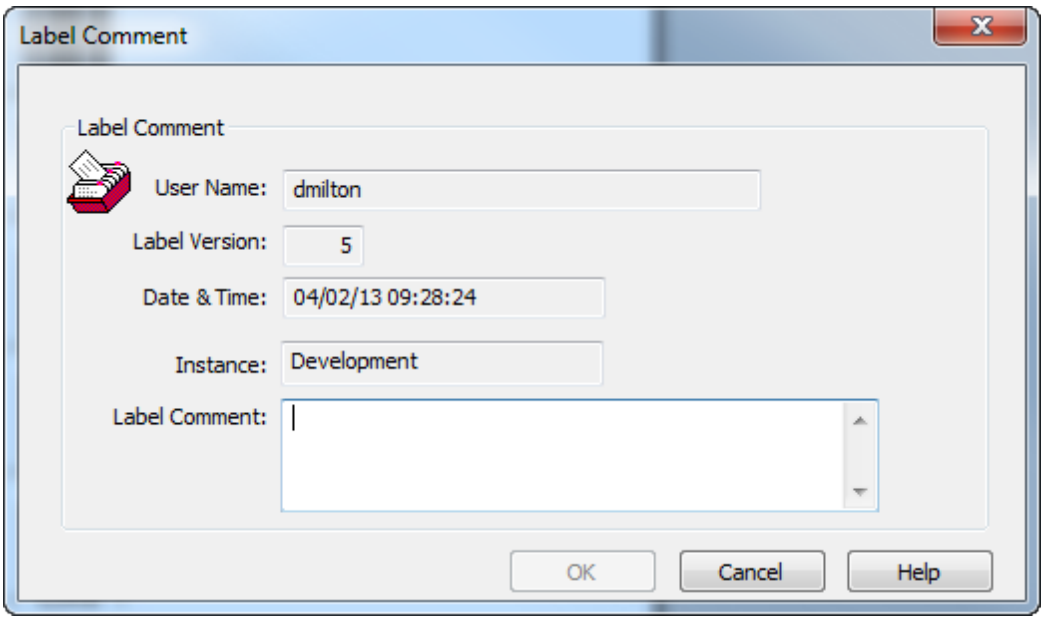


Figure 3.25: Label Comment Window

2. Enter comments on the changes made to this version of the label in the **Label Comment** field, and click **OK**.

The label is saved, and the comment is recorded along with a new version number for the label.

View Label Comments and Information

You can view information about the changes made to a label from the **Label Setup and Properties** window (**Media Setup**).

1. Open an existing label, and open Media Setup.
2. Select the **Label Properties** tab.

The properties and version history of the label are displayed.

Test-Printing Labels

In most cases, it is best to test-print a label after creating it. This allows you to check its accuracy and general appearance.

> **Note:** The following test-print procedures assume that you have completely installed the program and chosen a target printer. You print the sample label on the target printer.

To test-print a label

1. Verify that the target printer is **ON**.
2. Select the **File** | **Test Print** menu command or click **Test Print** from the standard toolbar. Alternatively, press **F9** or **Ctrl+P** on the keyboard.
3. View the **Test Print** dialog box that includes information regarding other methods of printing with Loftware Label Manager. Notice that your target device is identified in the Device box.
4. Select **OK**.

Your printer should produce your printed sample label exactly the way you designed it.

If you wish to view the On-Demand Print Form for the label you just created, do not close the file or exit Loftware Label Manager. Proceed directly to the On-demand Print section.

Note: Fields with check digit, formula fields, and database fields are not evaluated during a Test Print. Use On-Demand Print to get a true label with all data sources filled in.

Related Information
For information on how to configure printers, refer to the *Device Connections* section of this guide.

Error and Warning Messages

The following may be displayed after initiating Test Print or after changing fonts and saving the label. View | Warnings and Errors must be toggled on to display errors and warnings.

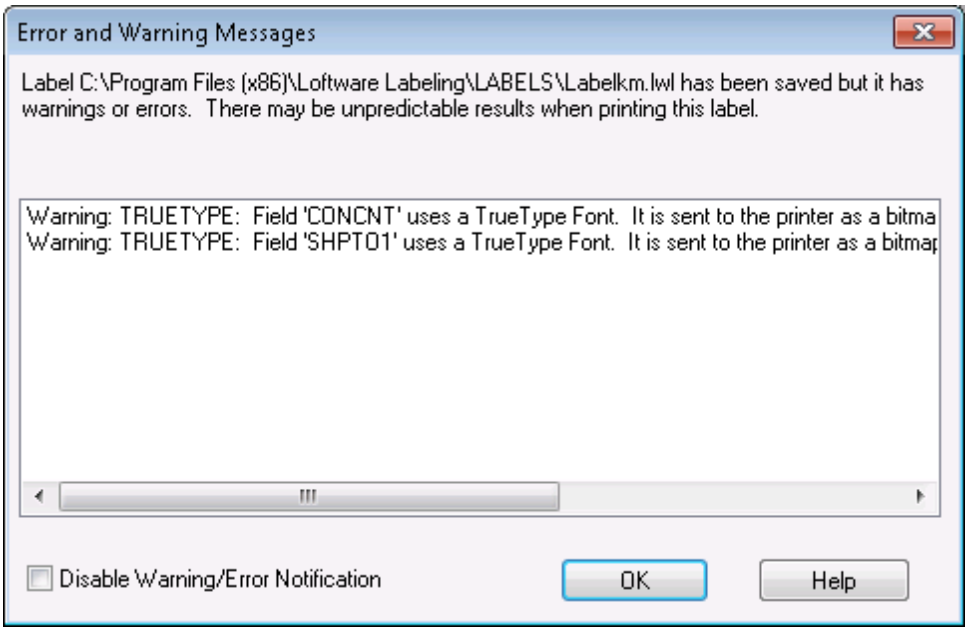

Error and Warning Messages
Label C:\Program Files (x86)\Loftware Labeling\LABELS\Labelkm.lwl has been saved but it has warnings or errors. There may be unpredictable results when printing this label.
Warning: TRUETYPE: Field 'CONCNT' uses a TrueType Font. It is sent to the printer as a bitma
Warning: TRUETYPE: Field 'SHPTO1' uses a TrueType Font. It is sent to the printer as a bitmap
Disable Warning/Error Notification
OK
Help

Figure 3.26: Error and Warning Messages

A description of the type of error or warning is displayed following the title. Some of the warnings are primarily informational, such as the TRUETYPE warning that is displayed whenever a label with TrueType fonts is saved or test printed. This warning does not prevent the label from being printed, but it does let you know that the label is being printed as a bitmap, which means the printing of this label is slower. Some of the warnings may prevent printing of the label, and must be corrected before the label prints at all, or corrected before the label prints correctly. A common example of this is the FIELDOFFLABEL message. When designing the label, make sure that the entire field is on the label, including the blue selection handles. An example of an Error may be an error in a datasource formula field, such as a circular reference, which must be corrected in order for the label to print.

Disable Warning/Error Notification

When this check box is enabled, Error and Warning Messages are not displayed. This may be helpful if you use TrueType fonts most of the time, and you are fully aware that the printing is slower. As a general rule, however, if this box is checked and a field is off the label (for example), this information is not displayed, and troubleshooting the printing problem may be difficult. A good case in point would be a field that looks like it is on the label, but whose selection handles are off the label. A lot of time could be spent looking for this type of error, whereas if notification is enabled, the error/warning is immediately displayed.

USB Errors

If the USB Printer is connected but the port cannot be written to, a **Recoverable printer error** dialog is displayed. A printer running out of stock or out of ribbon creates this error. Once the printer error has been cleared, click **Retry** to continue printing.

On-Demand Print

Some Loftware Label Manager applications require materials-handling or operations personnel to enter label-specific data prior to a print run, usually at a data entry station. Loftware Label Manager makes data entry easy because the system automatically:

- Creates an On-Demand Print Form each time you design and save a label file.
- Updates the On-Demand Print Form each time you edit and save an existing label file.

Thus, if you successfully designed and saved the label file, you have already created a corresponding On-Demand Print Form.

> **Related Information**
> A Client-Server version of On-Demand-Print as well as a web-enabled version is also available. Refer to the *Loftware Print Server User's Guide* for more details.

On-Demand Print: Form and Application

The following sections explain how to work with the On-Demand Print Form where the actual printing takes place.

Viewing/Editing the On-Demand Print Form

- Click the Switch Views toolbar icon , or select View | On-Demand Print Form to open the On-Demand Print Form.

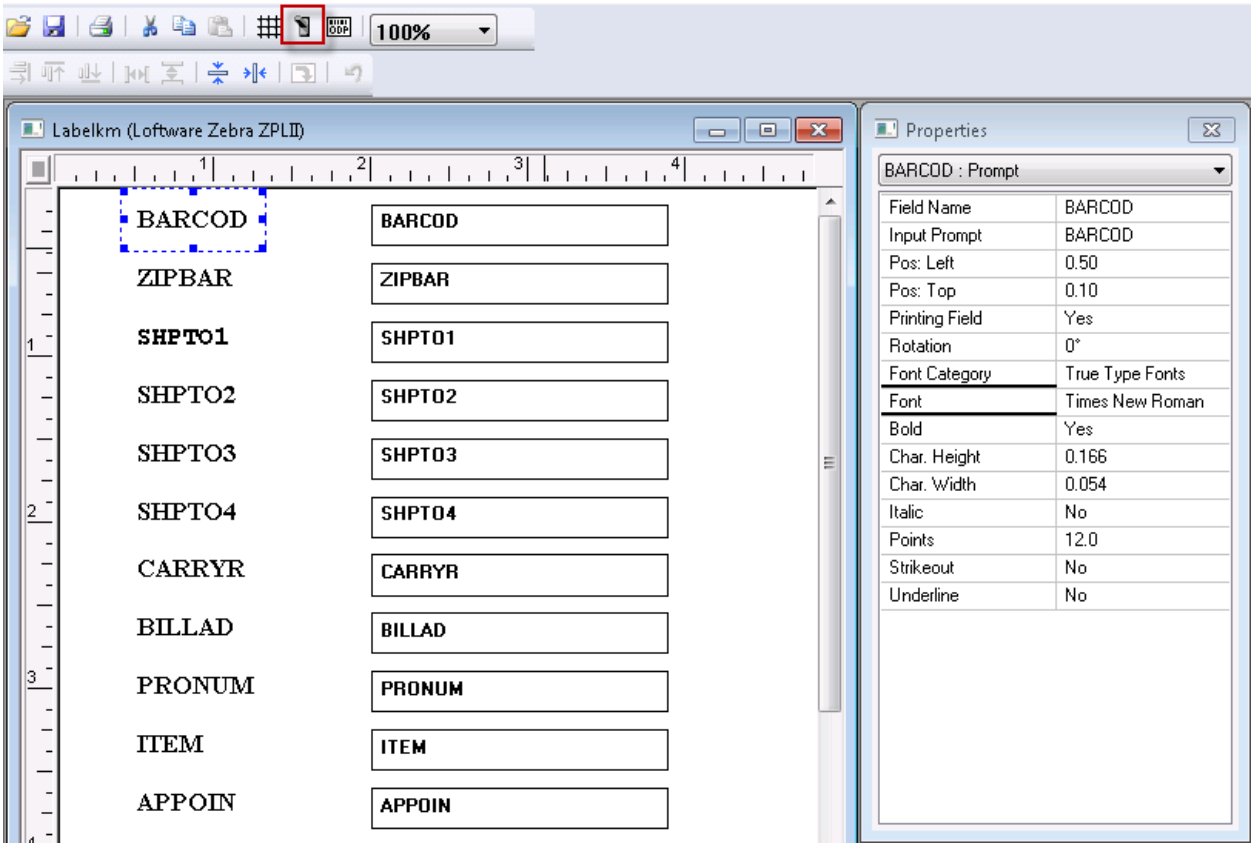


Figure 3.27: Designing the On-Demand Print Form

The format for this On-Demand Print Form represents the Loftware Label Manager default settings. You can customize On-Demand Print Forms to meet the requirements of your applications.

- Select View | Label Design to return to the label design view or you can use the Switch Views tool from the standard toolbar to toggle back and forth between the Label Design View and the On-Demand Print Form view of the label.
- Perhaps you are printing this label in a country outside the U.S. but shipping to the U.S. You may need to have the field name in one language and the Input Prompt in another language to facilitate ease of data input with non English-speaking employees.

Related Information
For examples of prompting and printing in international languages, refer to the *International Printing* section of this guide.
To learn more about customizing On-Demand Print Forms, refer to the *On-Demand Printing* section of this guide.

Production Printing

Now that you have created a label file (label1.lwl), saved the file, test-printed it and viewed it in On-Demand Print Form View, you are ready to print a shipping label.

In Loftware Label Manager, you can choose a printing mode:

- On-Demand
- Range

This allows virtually unlimited flexibility for your barcode label printing requirements.

We continue our example by printing Label1.LWL as a simple On-Demand Print job for one customer. On-Demand printing is where an operator uses the On-Demand Print Form we have created to type in data and print labels as needed in the On-Demand-Print Application.

Print a Label in the On-Demand Print Application

1. Click the On-Demand Printing icon on the toolbar in Design View. Our sample label Label1.lwl is displayed in the On-Demand print window, as shown in the previous figure.
2. Enter some information into each field on the form. Use the Tab or Enter key to move to the next field.
3. Enter the quantity of labels to print.
4. Click the printer icon to print, or choose File | Print menu command.

Exiting the Label Design or ODP Application

Select **File** | **Exit** to leave the Loftware Label Manager label design or On Demand Print application, or click the close button (X).

Designing a Label

This section describes designing an example label. The tutorial explains how to create a basic shipping label, including a shipping address, a return address and a part number encoded in a barcode. The finished sample label looks like the following:

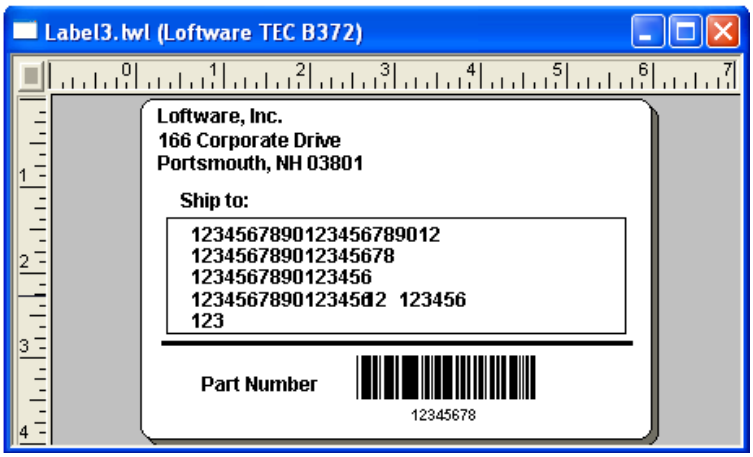


Figure 3.28: Finished Label

Text Fields

Fixed vs. Variable Text Fields

Your sample label features two types of text fields: fixed text fields and variable text fields.

Fixed text is text that does not change. An example of a fixed text field is the return address on a shipping label or the "SHIP TO:" descriptor just above a customer's name and address.

A Variable text field is essentially a place-holder. When creating a variable text field, you do not enter the text that is displayed on a printed label. Instead, you set parameters (for example the number of characters) for a field in which the text can vary from label to label. An operator may enter actual text later or text can be inserted from a database, ActiveX Control, or LPS pass file.

Examples of variable text fields include place-holders for Customer name, Company name, Street Address, City, State and Zip on a customer shipping label.

Use the tools described in the table to create text fields.

Tool	Description
Label (fixed text)	Adds a text field that is a permanent part of the label, such as a return address.
Insert | Fixed Text	
Variable Text	Adds a text field in which the text changes from label to label during the print run, such as a Customer Name field for an address label.
Insert | Text	

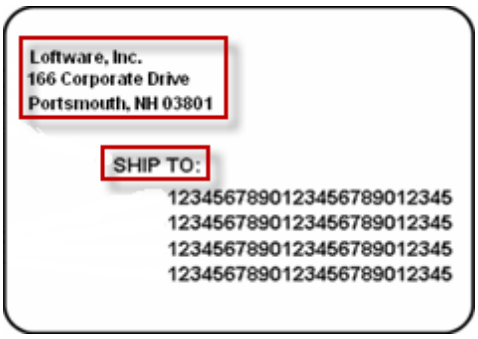


Figure 3.29: Label with Fixed Text Fields Outlined

Moving Fields

Fields may be moved by these methods:

- Selecting a field and using the arrow keys on the keyboard.
- Selecting the field and dragging it with the mouse.

Creating Text Fields

Step 1: Create the Return Address Fixed Text Fields

1. Select the Label (fixed text) tool A.
2. Move the mouse arrow to the upper left-hand corner of the blank label and left click
3. Type the following:
   - "Loftware, Inc.," then press **Enter**
   - "166 Corporate Drive," then press **Enter**
   - "Portsmouth, NH 03801," then press **Enter** twice

Notice that after you type the first fixed text field and press **Enter**, Loftware Label Manager automatically moves the cursor down to the next line so that you can enter additional fixed text fields. The font also changes to the default font for the particular printer that you are set for. When you finish entering text, press **Enter** on a blank line to end the automatic repeat function. You can also end the repeat function by clicking on a blank area of the label or double-clicking.

Note: Fixed text fields cannot be changed to variable text fields. To do this, delete the fixed field and replace it with a new variable one.

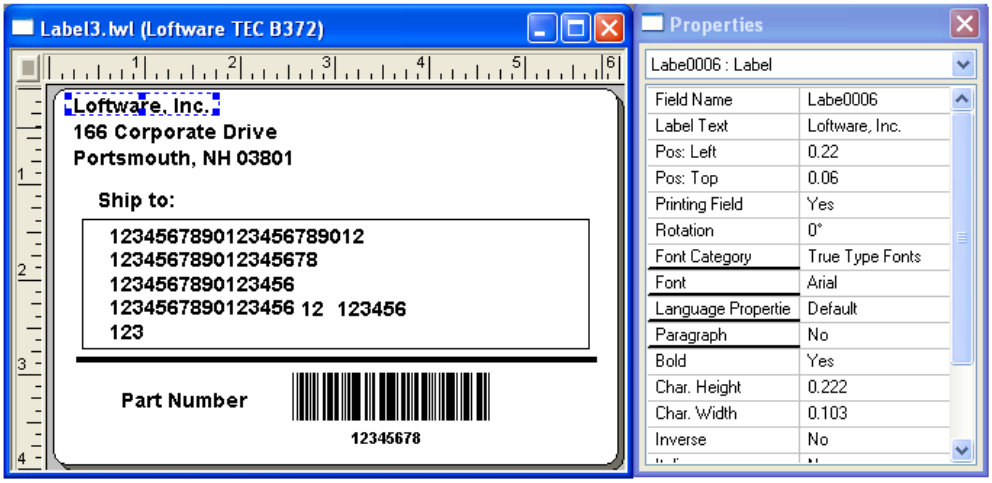


Figure 3.30: Step 1 - Add fixed text fields for return address

Note: Loftware Label Manager displays fonts that are available on the selected printer. Depending on your printer's font sizes, your label may look different from the samples. You may also have to adjust the positions of fields slightly by moving them.

Step 2: Creating the "Ship To" Fixed Text Field

1. Select the Label (fixed text) tool A.
2. When positioning the next fixed text field, use the screen odometer to guide. Notice how the descriptors in the screen odometer change as you move the mouse. Position the mouse so that the screen odometer reads approximately .5, 1.0 (½ inch from the left edge; 1 inch from the top) and left click.

Note: The position does not need to be precise. You can always reposition the text field later.

3. Type "SHIP TO" press **Enter** twice.

Step 3: Creating the Variable Text Fields

In the sample label, create variable text fields to accommodate the customer ship to address. Assume that each ship-to address requires four lines of text as shown in the example below. Because the fourth line of text features three variable fields (CITY, STATE, ZIP), you will actually create the following variable text fields for this label:

(1) SHIP TO COMPANY NAME

(2) ADDRESS 1

(3) ADDRESS 2

(4) CITY

(5) STATE

(6) ZIP

(7) COUNTRY

In this example, you can quickly create all variable text fields using a Loftware Label Manager shortcut feature.

1. Select the Variable Text tool .
2. Position the cursor just beneath and to the right of the “SHIP TO:” text and click.

A default 8-character variable field is shown:

The text “12345678” is a place-holder, which shows you that the field is currently 8 characters long. The blue boxes surrounding the field are called selection handles. They indicate that the field is selected and may be edited by using the **Properties** box or mouse.

Changing the Properties of Variable Text Fields

Since fields are always selected after they are created, this is a good time to change the field's properties. By changing the properties, you can change the appearance of the text field, as well as its font, size, length and name. This makes them easier to identify and select. Make these changes to the field you just created.

1. Select **Field Name** from the **Properties** box.
2. Type "Ship To Company" and press **Enter**.

> **Note:** After you enter the text, Loftware Label Manager changes the name to Ship_To_Company. Spaces are not allowed in field names, and so Loftware Label Manager adds underscores in the place of spaces. Also, note that the Input Prompt in the **Properties** box is identical to the Field Name you just typed. The Input Prompt (which is displayed on the On-Demand Print Form) usually echoes the Field Name.

The default setting for maximum number of characters in a text field is 8. Because the names of addressees usually consist of more than 8 characters, you must edit the field to ensure that customer's names are displayed correctly on your labels.

3. Select **Max # Chars** from the **Properties** box .
4. Type "22" and press **Enter**.

This allows the field to accommodate up to 22 characters of an individual's name.

Change other properties like font type and size, if needed. You now have completed your first variable text field and your label looks like the following:

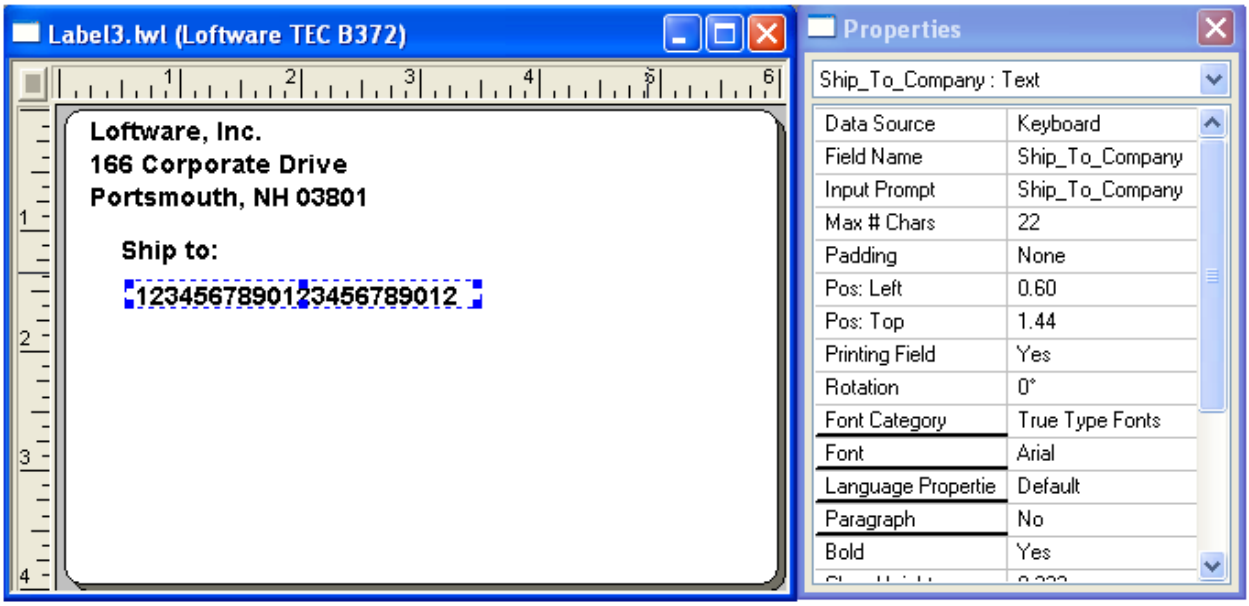


Figure 3.31: Step 3 - First variable text field

The next step demonstrates using Loftware Label Manager copy function to create additional variable text fields.

Copying a Variable Text Field

1. If it is not selected, select the field you just created (the Ship_To_Company field) by pointing to it and clicking the left mouse button. Selection handles are displayed around the field.
2. Move the cursor over the field until the move cursor is shown.
3. While pressing Ctrl and the left mouse button, drag the cursor to a position directly beneath the original field (the Ship_To_Company field). Release the left mouse button and the Ctrl key.
4. Repeat the previous steps twice, positioning each new field directly beneath the previous field. The label now shows four identical variable text fields.

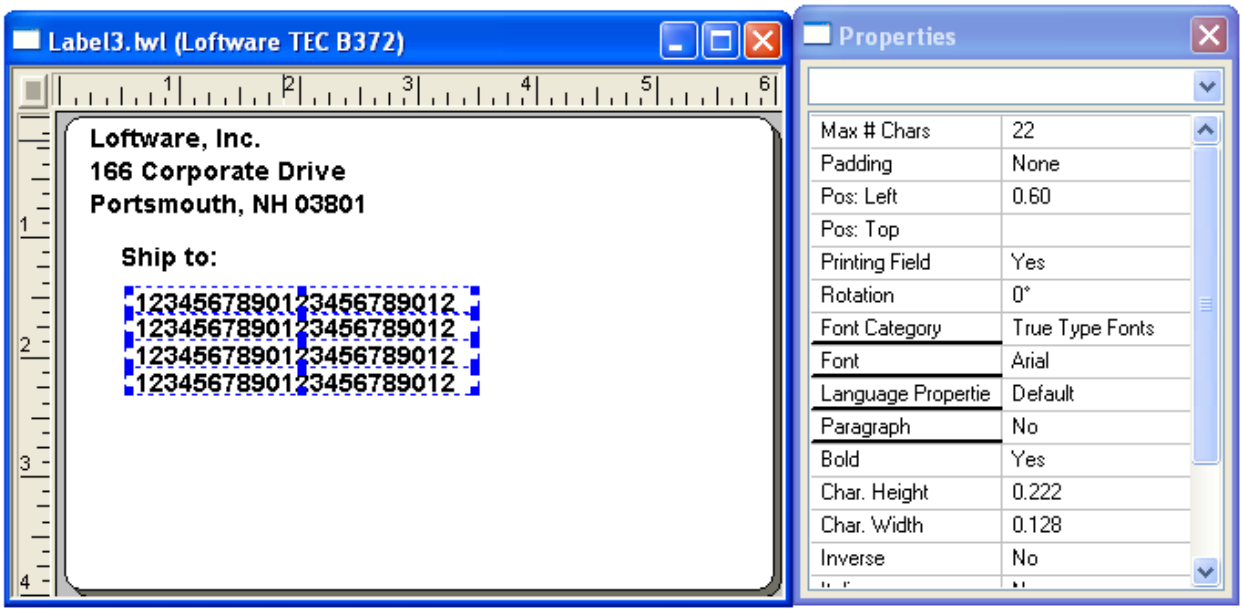


Figure 3.32: Variable fields copied using Ctrl+Drag

Setting the Field's Properties

Set the properties for the fields you just created by selecting the fields (by clicking them) one at a time and setting the properties.

1. Select the second variable field (it is below Ship_To_Company) by clicking. Change the **Field Name** property to Address1 and assign a **Max # Chars** of 20 characters.
2. Select the third variable field, change its name to Address2 and assign it a **Max # Chars** of 18 characters.
3. Select the fourth variable field, change its name to City and assign it a **Max # Chars** of 16 characters.

Creating the State and Zip Code Fields

In the previous steps, we created a label where the bottom line of a customer's address consists of these fields:

- Address1
- Address2
- City

To complete the text on our label, we will create the State and Zip Code fields.

Creating the State Field

1. Select the **City** field.
2. Position a new field directly to the right of the **City** field, using the Ctrl+Drag copy function.
3. Change the **Field Name** property to State.
4. Change the **Max # Chars** property to 5. This entry accommodates the two-letter abbreviations used by the US Postal Service, as well as longer province abbreviations.

Creating the Zip Code Field

1. Select the **State** field.
2. Use the Ctrl+Drag copy function to position a new field directly to the right of the **State** field.
3. Change the **Field Name** property to ZipCode.
4. Change the **Max # Chars** property to 10. This entry accommodates the standard 5-digit zip code used by the US Postal Service, a dash and the 4 digit zip code extension, as well as longer postal codes used outside of the U.S.

Creating the Country Field

1. Select the **Zip Code** field.
2. Use the Ctrl+Drag copy function to position a new field directly under the **City** field.
3. Change the **Field Name** property to Country.
4. Change the **Max # Chars** property to 3. This entry accommodates the standard 3-digit country code.

When you have completed these edits, your label looks like the following:

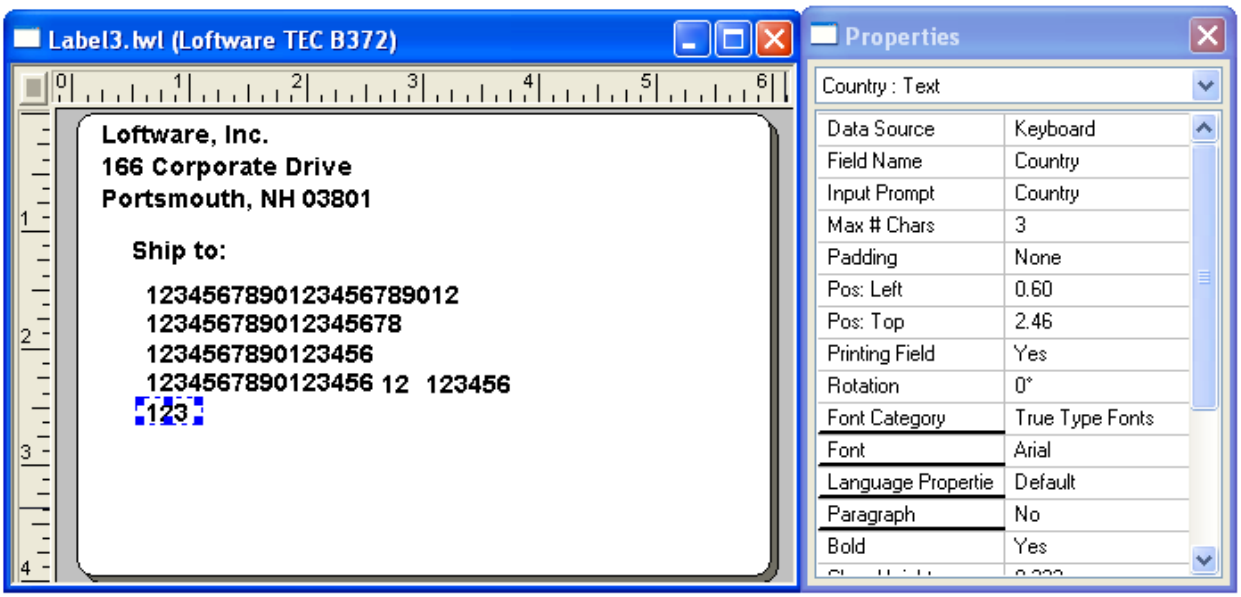


Figure 3.33: Completed variable text fields

Creating Barcode Fields

Many industrial shipping labels require one or more barcodes to help speed up the receiving process. To demonstrate the barcode capability of Loftware Label Manager, we will add a barcode to the sample label just below the shipping address. The barcode is used to identify a Part Number. A barcode may be created by using the Barcode tool or the Insert | Barcode menu command.

Creating a Barcode Field

1. Select the Barcode tool .
2. Position the cursor about 1/2 inch below and 2 inches to the right of the Country field, and click the left mouse button.
3. Change the barcode's **Field Name** property to PartNo.

Note: When a new barcode field is added to the label, a human readable interpretive field is also shown. These fields are treated as separate fields as far as label design is concerned but always automatically reflect the data that goes into the barcode field. If the data for the human readable field needs to be formatted differently from the barcode data, choose **None** in the barcodes **Human Readable** property and create a normal text field in its place. You may then use a Formula data source to format the barcode data.

Editing a Barcode Field

Although barcode properties differ from text field properties, the methods for editing both types of fields are the same. Up until now, we have always changed the properties of fields using the **Properties** box. However, it is also possible to edit some properties by resizing the field with the mouse. To demonstrate this, change the barcode using the mouse as follows:

To change the height of the barcode

1. Place the cursor over the top center selection handle of the barcode field. When the cursor is positioned properly, a resize cursor is displayed.
2. Press and hold the left mouse button.
3. Drag the resize cursor straight up, about 1/4-inch; release the left mouse button.

To change the width of the barcode, use the same procedure

1. Place the cursor over the right center selection handle of the barcode field. When the cursor is positioned properly, the resize cursor is displayed.
2. Press and hold the left mouse button.
3. Drag the resize cursor to the right until the resize rectangle jumps to the next available size; release the left mouse button.

Note: The resize rectangle grew smoothly when you changed the height of the barcode but jumped to the next available size when you changed the width. In each case, Loftware Label Manager displays the next available size for the field. Code 39 barcodes grow continuously in their height but discreetly in their width (jumping to the next available line width or X-dimension). Loftware Label Manager always reflects on the label the way the selected field behaves in the printer.

The Finishing Touches

To complete the example label, add one more text fields and a line. First, add descriptive text next to a barcode field to identify what information is stored in the barcode and call it Part Number.

Adding Descriptive Text to a Label

1. Select the Fixed Text tool .
2. Position the cursor to the left of the barcode field.
3. Type: Part Number
4. Press **Enter**. This moves the cursor to a new line as if you were typing a second line of text (the auto-repeat feature). You do not type a second line of text in this practice exercise.
5. Press **Enter** again to end the creation of fixed text fields.

The last change we are making to our label is to add a line to the label. Lines enhance the appearance and functionality of a label by separating the label into different sections. In the sample label, add a line between the **ship to address** and the **part number** barcode field.

Adding a Line to a Label

To create a line, use the Line Tool or use the Insert | Line menu command.

1. Select the Line tool from the Loftware Label Manager toolbox .
2. Position the cursor inside the left edge of the label, between the bottom line of variable text fields and the top of the barcode. Press and hold the left mouse button.
3. Drag the cursor directly from left to right across the label.
4. Release the mouse button when the cursor is just inside the right edge of the label.
5. Set the Line Thickness in the **Properties** box to 0.050.
6. You can also add a box to define the Ship to label fields. Select the Box tool, and use the mouse to drag a box around the label fields.

Your completed label should look similar to the following example:

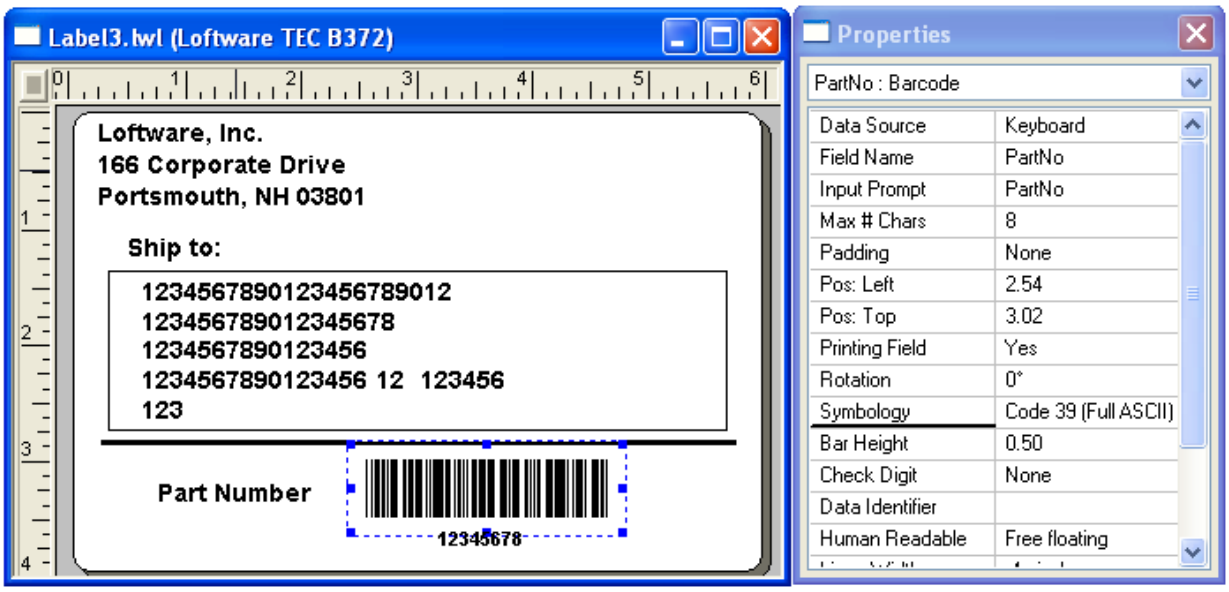


Figure 3.34: Completed label with line separating barcode from address area

Resizing Text and Line Fields

The same principles used in re-sizing the barcode apply to the other sections of the label.

All of the fields on the label above may be re-sized by selecting a handle, and dragging the handle until the field looks the way you would like.

You may enter numeric values for the field in the **Property** box. This automatically re-sizes the label as well.

Saving a Label File

1. Select the File | Save command or select the Save icon from the Loftware Label Manager Toolbar.
2. Enter this file name in the dialog box: Label1.lwl (extension is optional).
3. Click **OK**. If commenting on labels is enabled, the **Label Comment** window opens.
4. Enter a comment describing the changes made to this version of the label, and click **OK**.

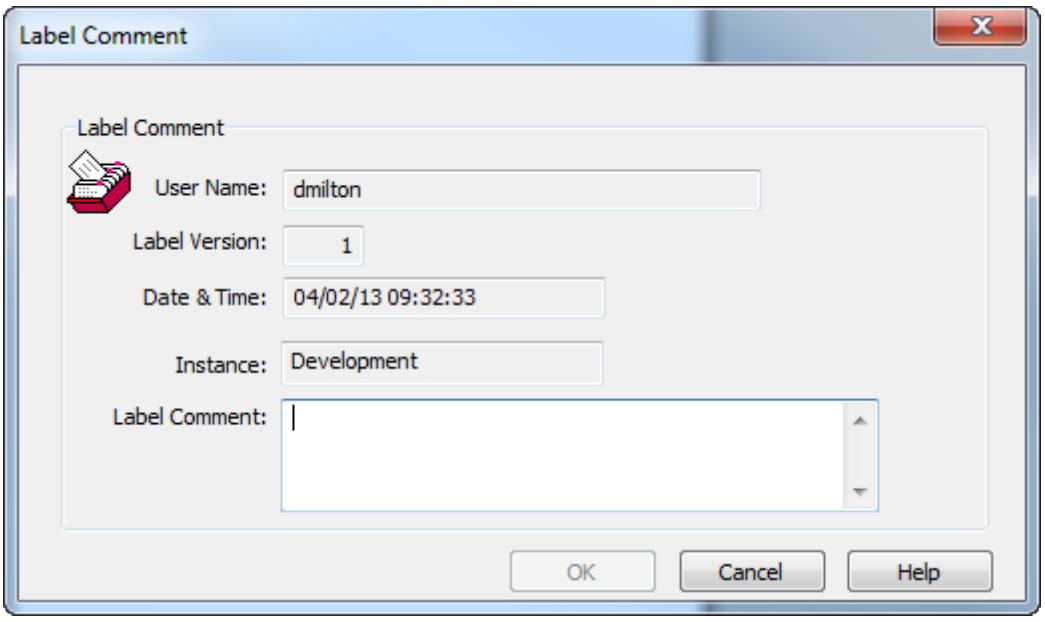


Figure 3.35: Label Comment Window

Note: When you save a label file, Loftware Label Manager may display an error message listing errors that may have occurred during the creation or editing of label fields. The most common error message informs you that a field is partly off the label. The label may not print correctly until the errors are corrected, although you can still save the label in its current form. If Loftware Label Manager detects one or more errors on your sample label, check the appropriate fields. Either delete the faulty fields, and create new fields following the steps described earlier; or edit the fields.

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This section describes techniques for customizing your label, to ensure that it meets with your design and industry standards. Advanced barcode information is also included.

Topics covered in this section include:

- Editing Multiple Fields
- Creating Multiple Barcodes
- Creating a list (LST) file for constraining field names
- Special Barcode Properties
- Fonts, Images, Lines, and Boxes
- Paragraph Text Fields
- Creating a Constrained Field List
- Printing High ASCII Characters
- Using Code 128 and MaxiCode

Editing Multiple Fields Simultaneously

Loftware Label Manager allows you to edit two or more similar fields simultaneously using the **Properties** box. Follow the instructions in this section to:

- Create a field.
- Copy the field.
- Edit the properties of both fields simultaneously.

Make a duplicate field

By holding the **Ctrl** key, clicking, and dragging you can duplicate any object placed in the design area of Loftware Label Manager Design.

Note: This examples in this section use barcodes, but the process is the same for fields, shapes, and images.

1. On a new blank Loftware Label Manager label, select the barcode icon from the Loftware Label Manager Toolbox.
2. Select a starting point near the upper left-hand corner of the label.
3. Click and drag the cursor in the label design area (down and to the right) to make a barcode, and release the left mouse button. A barcode field with its associated human readable text field appears.

Note: Loftware includes a Barcode Wizard that is useful in adding a variety of symbologies to your label. Information on the Barcode Wizard may be found in the Templates and Wizards section in this guide.

4. With the original field selected (selection handles visible), move the cursor over the field until the movement cursor is shown.
5. While holding the **Ctrl** key, drag the mouse away from the original barcode field.
6. Release the left mouse button and the **Ctrl** key.

A duplicate barcode field appears below and to the right of the original.

Select Multiple Fields

You can select any number of fields for simultaneous editing using this procedure.

1. Select the first barcode (not the adjacent human readable field) to select the barcode.
2. While holding the **Ctrl** key, click the duplicate barcode field (not the adjacent human readable text field). Both barcode fields are selected simultaneously, independent of their accompanying human readable text fields.

The **Properties** box displays all properties that are shared by both fields.

Example

Select two barcodes and two text fields. You may see that the only properties you can change simultaneously are:

- Pos:Top
- Pos:Left
- Printing Field
- Rotation

If the selected fields have the same value for a specific property, the value is shown in the **Properties** box; otherwise, the value is blank. If the **Properties** box is not visible, select **View** | **Properties** from the menu bar.

Example

If bar heights for 2 selected barcodes are not identical, the **Bar Height** entry in the **Properties** box is blank. If you enter a new value in the bar height property, the **Properties** box displays the new value, and both fields change.

You can now simultaneously edit the properties of both barcodes.

Align the Two Fields

You can align multiple fields to a specific position on the label.

1. Select **Pos: Left** from the **Properties** box.
2. Type ".5."
3. Press **Enter**.

Both barcodes click into place simultaneously. The left edges of both fields are aligned at the .5-inch position on the label. You may also use the left-alignment tool to accomplish this task.

Change the Line-Width Ratio Simultaneously

You can change shared properties among fields.

1. With two or more fields selected, select **Ratio** in the **Properties** box.
2. Choose a different ratio from the list.

> **Note:** The ratio automatically advances to the chosen setting for both barcodes.

Facts about Fonts

Many Loftware Label Manager features are printer-dependent. In fact, the Loftware Label Manager graphical designer changes the appearance of a label and its available fields and properties to match the capabilities of the selected printer.

With fonts, different printers cause the Loftware Label Manager to display different properties and available fonts. For example, standard Windows printers, such as a LaserJet printer, normally support TrueType fonts. TrueType fonts are sized by selecting a point size. The higher the point size, the larger the font.

> **Note:** When you design labels with Loftware Label Manager, the characteristics of the printer determine font capabilities in the label designer.

Loftware Label Manager supports the following font types:

- Dot fonts
- TrueType fonts
- Hybrid fonts
- Flexible fonts

In Loftware Label Manager, dot fonts, hybrid fonts and flexible fonts can be accessed by selecting **Native Fonts** as the Font Category in the **Properties** box drop-down menu. To select Windows TrueType Fonts, choose **True Type Fonts** as the **Font Category**.

> **Note:** When resizing text fields, note that different types of fonts behave differently. This is because different types of fonts have different resize rules. The design window is reflecting the capabilities of the selected printer. It is strongly suggested that you familiarize yourself with the different types of fonts your printer supports. You may discover that some fonts are more useful than others are, depending on the nature of your label.

Dot fonts

Characters printed in dot fonts are displayed as a series of dots. Dot fonts are a predetermined size and cannot be resized. Many printers have the ability to magnify dot fonts.

In Loftware Label Manager, Dot fonts usually have names which indicate their size, such as "7 x 9" or "16 x 22." Dot fonts have Font Height, Magnify Height and Magnify Width properties. When you select a dot font, you can magnify the height and the width independently of the font using the Magnify Height and Magnify Width properties in the Properties box or by resizing the text field with the mouse.

As you change the size of the font, Loftware Label Manager updates the Font Height property to display the height of the font. If you change the Font Height property, Loftware Label Manager automatically changes both the height and the width of the characters to provide a normal aspect ratio.

If you want to create tall-skinny characters in a dot font, adjust the Magnify Height and Magnify Width properties. If you want to make the text larger, but preserve its proportion, use the Font Height property.

Note: When magnified, dot fonts print with ragged edges.

TrueType Fonts

TrueType fonts are scaleable printer fonts and standard Windows fonts. You can increase or decrease the size of the characters by selecting the size of the font (Points). You can also change the height and width independently.

In Loftware Label Manager, TrueType fonts can be resized using **Points** or **Char. Height** and **Char. Width** properties. These fonts always print with smooth edges, regardless of the degree of magnification.

More font information

Option	Description
For maximum print speed when using TrueType fonts	Print via a parallel printer interface, as TrueType fonts are sent to the printer as a bitmapped image and therefore may be significantly slower than using the printer's internal native fonts.
For printer TrueType support	Refer to the *Loftware Label Manager User Guide* under your specific printer make for information on downloading TrueType fonts to your printer.
To change font size in Loftware Label Manager	Edit the Points property or resize the field by clicking and dragging the field outline to a new size.
Online Help	Look under specific printer type being used for information on downloading TrueType fonts.

Hybrid fonts

Hybrid fonts are associated with thermal transfer printers and are a cross between TrueType and Dot fonts. Like point fonts, hybrid fonts are available in a predetermined set of point sizes. Like dot fonts, each point size can also be magnified.

In Loftware Label Manager, hybrid fonts feature Font Height, Point Size, Magnify Height, and Magnify Width properties. As with dot fonts, use the Magnify Height and Magnify Width properties to independently size character height and width or use the Font Height property to change the size of the characters while maintaining the proper aspect ratio.

Note: Most printers have an internal scaleable font that resembles a TrueType san serif font. Use this font instead of a TrueType font whenever possible. Your labels print much faster this way.

Flexible fonts

Flexible fonts (also called vector fonts or outline fonts) can be scaled to any size and are native to most printers. These are the best choice for quality and speed. Usually, you can size the character height and width independently in a flexible font. Use these fonts whenever possible to achieve a balance between download speed and print quality.

In Loftware Label Manager, flexible fonts have Character Height, Character Width and Point Size properties. Choosing a point size sets both the height and width to a preset aspect ratio. To create tall-skinny characters, make appropriate edits to both the Char Height and Char Width properties. When printed, flexible font characters retain their smooth edges regardless of their size.

To change character size in LLM, edit the Magnify Height and/or Magnify Width properties independently.

Note: When working with fonts, note the Spacing property. Some fonts are Monospace and some are Proportional. In Monospace fonts, all characters are the same width. Proportional fonts have a different width for every character. TrueType fonts are usually proportional. Proportional fonts read better on the printed label. It is harder to predict envelope size, as it varies with the data.

If you use any of the Justify properties, it is best to use Monospace fonts.

Related Information
For information about printing symbols and international characters, refer to the *International Printing* section in this guide.
For more information and examples on Monospace and Proportional Fonts and spacing, refer to *Creating a Label* in this guide.

Fixed Text Properties

Property	Description	Values
Field Name	The name of the field. Names must start with a letter. Other characters can be numbers, letters, periods, or underlines. It is important to give your fields meaningful names. **For Example** Gross_Weight Total_pieces	Field Name Conditions
Label Text	Fixed textual information for the field. The information in this field is static and cannot be changed except in Label Design. **Note:** When you have configured a field with a UTF-8 Data Format using the Language Properties Wizard, the **Label Text** property will not appear in the **Properties** box. Double click on the field to open the **Edit Fixed Text** property	Text
Pos: Left	Distance from the left edge of the label to the left edge of this field.	
Pos: Top	Distance from the top edge of the label to the top edge of this field.	
Printing Field	Allows the creation of a non-printing field. Non-printing fields are commonly used in formula fields.	Yes/No
Rotation	The direction of this field relative to the top of the label.	0 90 180 270
Font Category	Type of fonts that are currently displayed.	Native True Type Fonts
Font	Select the font type. Note that the properties below this property may change depending on the selected font.	Available Fonts
Language Properties	Configures the printing of selected languages on a per field basis. Character Sets, Byte Order and Data Format for the field can also be set using the Language Properties Wizard.	Opens the Language Properties Wizard

Property	Description	Values
Paragraph	Converts the field to and from a paragraph field. A paragraph field contains more than one line of textual information.	Yes/No
Char. Height	Specify the height of the font.	
Char. Rotate	Rotate the characters within the field. This lets you create stacked text. **Note:** Each printer handles the spacing of rotated characters differently. The on-screen display uses typical spacing, the actual printed spacing may vary.	Yes/No
Char Width	Specify the width of the font.	
Inverse	Inverts or reverses the font.	Yes/No
Points	Select the point size of the font. Setting the point size sets both the height and the width of the characters. **Important:** This is the distance from the top of an uppercase letter to the bottom of a descender (For example: A and y). The actual height of any letter will be less than the target height.	
Spacing	The spacing of letter within a font. Using a monospace font, all characters are the same width. Using proportional spacing letters take up space depending on their actual width. **For Example** An i uses less space than a w. Proportional fonts are generally easier to read than monospace fonts.	Monospace Proportional

Edit Fixed Text

The **Edit Fixed Text** window opens when you double-click a text field.

1. Double-click on a fixed text field in Design.
2. Enter the new text.
3. Click **OK**.

The text on the label and in the **Label Text** property is updated to the new text.

Text Properties

In addition to the properties for a Fixed Text field, text or variable fields have the following properties.

Property	Description	Values
Data Source	The Data Source property specifies • Where the field will get its data from. • The rules for data entered in this field. Press the Ellipses (...) button to see the available data sources for this field.	See Configuring Data Sources
Input Prompt	The prompt that will appear on the operator data entry screen. **For Example** Part Number Item Description	Text
Max # Chars	Maximum number of characters that will be printed for this field. If this field is filled in at print time, this is the maximum number of characters that the operator will be able to enter in the data entry screen.	Number
Padding	Padding allows you to specify how the field is to be filled if the operator enters a value shorter than the maximum allowed characters in the field. **For Example** A field has a maximum length of 9 and has the pad with Leading zeros option set. Operator enters: 1234 Data prints as: 000001234	▪ None ▪ Leading zeros ▪ Leading spaces ▪ Trailing spaces ▪ Center with spaces

Properties for Paragraph Text Fields

Loftware Label Manager's paragraph text field supports variable text fields. Loftware Label Manager parses data input at print time, automatically splits, and justifies the text at appropriate word breaks. This is useful for warning messages coming from a file or database that you want to automatically wrap to the next line(s).

Paragraph text fields maintain the same set of field attributes supported by traditional Loftware Label Manager text fields:

- Rotation
- Max # characters
- Position

- Font Category
- Font

Additionally, paragraph text fields support:

- Interline spacing
- Justify
- Max # lines

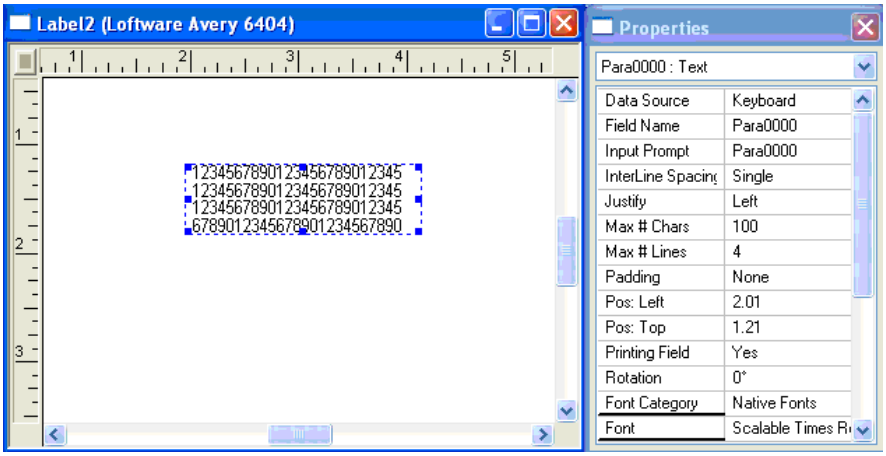

Figure 4.1: Paragraph Text field with the Properties Box displayed

Interline Spacing

This property determines the spacing size between lines of paragraph text. The values for interline Spacing are: Single, Double, Triple, or Quadruple.

Loftware Label Manager determines this value from the size of the font, which is the character height in addition to the envelope that includes the ascender (height above the character) and descender (height below the character) spacing. For example, the total height of the envelope for the character "a" would be the same for the character "P" or the character "g".

Justify

This property determines what justification the paragraph is going to exhibit at print time. The justification values are as follows: left, right, and center. As stated in the preceding font section, Monospace fonts justify much better than Proportional fonts.

> **Note:** Justification for Paragraph text fields is determined from the context of the size of the field, not the context of the size of the label. Fields within the label can be accurately justified if you know the approximate amount of data you are going to send at print time.

Max # Lines

This property determines the maximum number of lines that a paragraph can span. This property is tied to the Max # Chars property. It is important to determine a workable value for these two properties. For example, if you choose 100 for the Max # Chars and 4 for the Max # Lines, Loftware Label Manager automatically splits your data input into a maximum of 4 lines with up to 25 characters each. If there are wide discrepancies, or variations in the amount of data sent, select the value that takes into consideration the maximum amount. This alleviates situations where too much data is sent, causing possible data truncation.

Note: Paragraph Text fields maintain the same set of data sources available to Loftware Label Manager Text fields. Please refer to the Data Sources section for complete information.

Paragraph Properties

In addition to the properties for a Fixed Text field, text or variable fields have the following properties.

Property	Description	Values
Data Source	The Data Source property specifies ▪ Where the field will get its data from. ▪ The rules for data entered in this field. Press the Ellipses (...) button to see the available data sources for this field.	See Configuring Data Sources
Input Prompt	The prompt that will appear on the operator data entry screen. ▪ For Example ▪ Part Number ▪ Item Description	Text
InterLine Spacing	The amount of spacing between each line of a paragraph. ▪ Single space provides one blank line between each printed line. ▪ Double space provides two blank lines between each printed line. ▪ Triple space provides three blank lines between each printed line. ▪ Quadruple space provides four blank lines between each printed line.	Single Double Triple Quadruple

Property	Description	Values
Justify	The alignment of Paragraph text lines.	Left Center Right
Max # Chars	Maximum number of characters that will be printed for this field. If this field is filled in at print time, this is the maximum number of characters that the operator will be able to enter in the data entry screen.	Number
Max # Lines	The maximum number of lines that will be printed for the paragraph field.	Number
Chars Per Line	The maximum number of characters that can be entered in each line of the paragraph.	Number

Creating a Paragraph Text Field

There are two methods for adding paragraphs on your labels from the Loftware Label Manager designer:

- Click the Paragraph Tool from the Loftware Label Manager Toolbox, and then drop a paragraph text field on your label.
- Change the **Paragraph** attribute in the Loftware Label Manager **Properties** box for a variable text field to Yes.

Note: Field position is important to understand for paragraph text fields since the justification attributes (left, right, and center) should be considered for all applications that utilize paragraphs.

Processing Paragraph Text Fields at Print-Time

Paragraphs are displayed within the Loftware Label Manager WYSIWYG or GUI designer. It is only during a production print run, however, that Loftware Label Manager knows what data is going to be processed and printed.

Not all printers supported by Loftware Label Manager have internal paragraphing capabilities. Therefore, Loftware Label Manager automatically parses the data input at print time and splits the text into appropriate sub-fields. These sub-fields are then justified and sent to the printer.

Images and Graphics

The Loftware Label Manager has an image importer and manipulation utility that can directly read many popular image file formats including .BMP, .JPG, .GIF, and .TIF.

Important: If the currently selected printer does not support graphic images, the graphics creation and editing functions are disabled.

Supported Image Types

Note: Certain TIF and GIF files that use LZW compression may cause an error or not print correctly.

File Type	File Extension
Targa	TGA
TIF	TIF or TIFF
CALS	CAL, CALS, or RAS
GIF	GIF
MacPaint	PNT
GEM Image	IMG
Loftware IMG	IMG
Microsoft Paint	MSP
WordPerfect	WPG
SUN Raster	RAS
Macintosh PICTURE	PCT, PIC, or PICT
Windows & OS/2 BMP	BMP
PCX (Paintbrush)	PCX
LEAD	CMP
JPEG	JPG or JPEG
Portable Network Graphics	PNG
PhotoShop	PSD

Save Fixed Images in Label

You can save or embed fixed images within a label. This can help prevent changes to fixed images when versioning labels.

Considerations

- Labels with embedded images have a larger file size than those that simply reference images.
- For each version of a label, a copy is saved on your computer or server. Embedding images could substantially increase the file space needed.

Note: You are not required to use Label Versioning to embed images within labels.

The following options determine what happens when fixed images are embedded in a label.

- **Do Not Save** - Use this when you want the label to always use the latest image.
- **Always Update** - Automatically update the image embedded in the label if the image has been updated on the file system.
- **Prompt Before Update** - Display a prompt asking if the embedded image should be updated with the latest image on the file system.
- **Never Update** - Do not update the embedded image with the latest image on the file system.

Note: If **Always Update** or **Prompt Before Update** are selected and a new image is updated, you must save the label before the embedded image will be updated.

Configure Fixed Images

Important: To use embedded images with Label Versioning, you must also Enable Label Versioning.

1. From Design 32, select Options | Preferences.
2. Expand **Design Options**.
3. Select one of the following options to embed images within labels.
   - Always Update
   - Prompt Before Update
   - Never Update

Note: Select **Do Not Save** to disable embedding images.

4. Click **OK**. You must restart Design 32 before your changes will take affect.

Image Properties

Property	Description	Values
Data Source	The Data Source property specifies ▪ Where the field will get its data from. ▪ The rules for data entered in this field. Press the Ellipses (…) button to see the available data sources for this field.	See Configuring Data Sources

Property	Description	Values
Dither Method	Specify a dither method to use. This property is only used with images that have more than 256 colors. For these images, you can adjust the quality of the image using the dither method. **Note:** Because of their color pallete, some images may appear as solid black or solid white (invisible) unless they are dithered.	■ None ■ Floyd Steinberg ■ Stucki ■ Burkes ■ Sierra ■ Stevenson Arce ■ Jarvis ■ Ordered
Field Name	The name of the field. Names must start with a letter. Other characters can be numbers, letters, periods, or underlines. It is important to give your fields meaningful names. **For Example** Gross_Weight Total_pieces	Field Name Conditions
Input Prompt	The prompt that will appear on the operator data entry screen. **For Example** Part Number Item Description	Text
Max # Chars	Maximum number of characters that will be printed for this field. If this field is filled in at print time, this is the maximum number of characters that the operator will be able to enter in the data entry screen.	Number
Pos: Left	Distance from the left edge of the label to the left edge of this field.	
Pos: Top	Distance from the top edge of the label to the top edge of this field.	
Printing Field	Allows the creation of a non-printing field. Non-printing fields are commonly used in formula fields.	Yes/No
Rotation	The direction of this field relative to the top of the label.	0 90 180 270

Property	Description	Values
Size: Height	The vertical span of the box.	
Size: Width	The horizontal span of box.	

Adding a Graphic Image to a Label

1. Choose the image tool from the Loftware Label Manager toolbox.
2. Place the position marker on the label where you want the top left corner of the image to be located. You can refer to the Screen Odometer for positioning data.
3. Click the label where you want the upper left corner of the image placed.
4. In the dialog box, select the file name of the graphic image you wish to add to the label.

Note: Loftware has some stock images in the images folder which may be used freely. If you need other images, add them to the folder for easy access. Loftware does not provide additional images.

5. Select **OK**. The graphic image snaps into place on the label.

Note: The default Max # Chars for images is 12. You must increase this attribute if you plan to specify full path names for your variable images.

The use of fixed UNC paths (\\server\location\file) to set a fixed image's data source may cause performance issues in Loftware Label Manager Design if the path becomes unavailable.

Sizing a Graphic Image on a Label

The following steps describe how to change basic dimensions of the image area only.

1. Select the graphic image field you wish to edit.
2. Move the mouse arrow to the **Properties** box and select the property you wish to edit.
3. Use the keyboard and/or mouse to change the dimensions of the frame.
4. Press **Enter** or position the cursor outside the **Properties** box and click the left mouse button.

Note: The Loftware Label Manager edit functions allow you to change the basic dimensions (height, width, rotation) of a graphic image field. To edit the image itself, use a graphic editing program such as Windows Paint or Paint Shop Pro.

Special Properties of Image Fields

Image fields behave similarly to other types of Loftware Label Manager fields. When you select an image field, the **Properties** box displays values similar to those found in other fields. To change values, follow the same editing steps described for barcode and text fields.

Note: The default screen display for images is monochrome. If you want to display color, enable **Show Images in Color** in the Options | Preferences | Design Options tab.

Two properties that are unique to image fields require special attention:

- Image Size Rule
- Dither Method

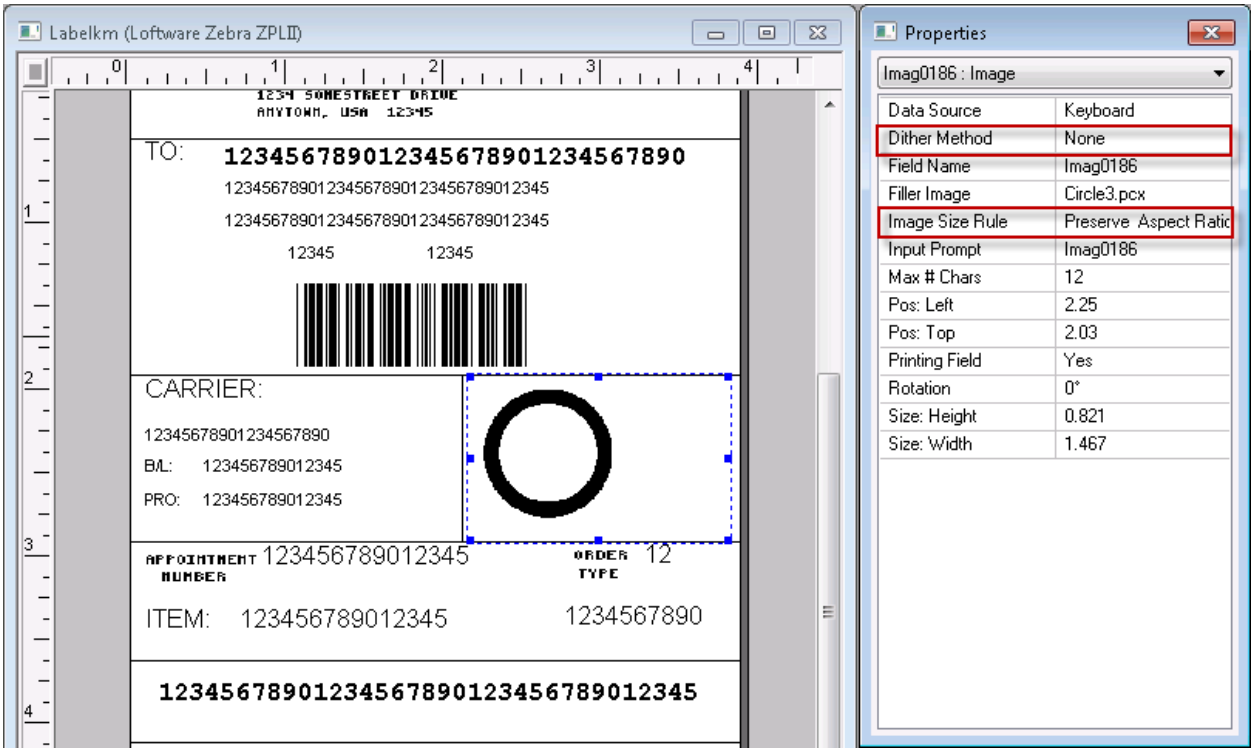

Figure 4.2: Image Properties Box

Filler Image

A filler image is a representation of an image that is displayed on the screen. If the data source for the image is fixed, then the filler image is the image that prints. For other data sources, where the actual printed image is determined at print time, the filler image acts as a place-holder which defines the size of your image, the dithering method and other properties.

When you select the image icon and click the label, the Loftware Label Manager displays a list of currently available image files.

Under the system default, when an image other than the original is selected, the new image is displayed in the same filler image area on the label. Loftware Label Manager automatically resizes the new image to fit the dimensions of the image box. When sized to fit, however, the new image may be stretched so that normally smooth lines are jagged. The image may be so compressed that it becomes illegible. For example, a circle may become an oval or a square may become a rectangle.

Image Size Rule

To deal with image sizing issues, the Loftware Label Manager includes an Image Size Rule property. The primary purpose of this rule is to control the characteristics of variable images (images which are not specified until print time).

When you select Image Size Rule in the Properties box and select the options button in the text box, Loftware Label Manager displays three options.

Option	Description
Allow Resizing	This option automatically resizes a new image to fit the image box, as described above. The dimensions of the place-holder always remain the same, but the critical aspects of an image (for example, the roundness of a circle) may be distorted.
Preserve Aspect Ratio (default)	This option gives you the best available rendering of an image while keeping it within the original image box, although the image may not necessarily fill out the available space in the image box When you choose this option, a circle always remains a circle (its circular shape is never distorted). The image keys off the upper left-hand corner of the image box.
Preserve Image Size	This option ignores the size of the filler image and prints the image to its original file size, keying off the upper left-hand corner of the image box. At print time, a large image could spill over outside the image area and obscure other fields.

Dither Method

Loftware Label Manager automatically matches the color depth of any images you print to the target printer; that is, you can send color images to a thermal transfer printer. For most applications, the automatic conversion performed by Loftware Label Manager provides the best results and there is no need to dither the image. The default Dither Method is **none**.

However, there are cases where you may want to specify a dither method:

- If you are using an image with more than 256 colors. Try different dithering algorithms to obtain the best results.
- If your image is shown as a black box or is not shown. Some images may disappear when their color depth is adjusted. Dithering may allow these images to be used with Loftware Label Manager.

Lines and Boxes

Loftware Label Manager makes it easy for you to enhance the appearance of your labels with lines and boxes. For example, you can:

- Separate two fields with a bold line.
- Create a frame around an image.
- Place a border around a label.
- Use the Properties box to change the characteristics of a line or box.

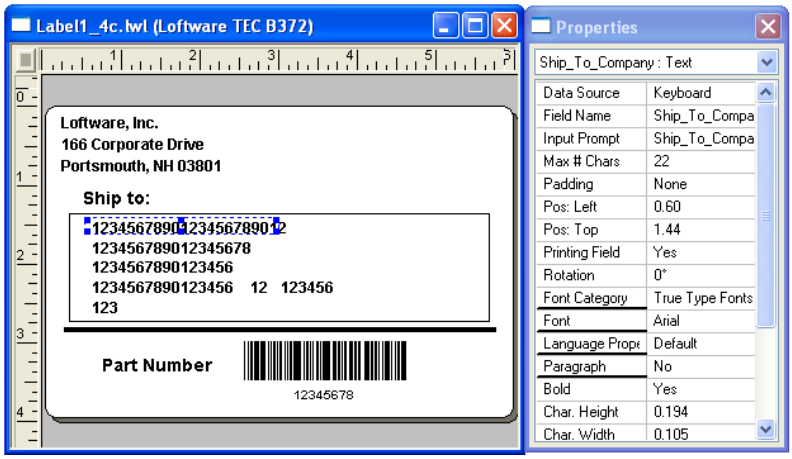

Figure 4.3: Label with lines, boxes and a border placed around the edge

Line Properties

Property	Description	Values
Field Name	The name of the field. Names must start with a letter. Other characters can be numbers, letters, periods, or underlines. It is important to give your fields meaningful names. **For Example** Gross_Weight Total_pieces	Field Name Conditions
Line Length	The span of the line.	
Line Thickness	The width of the line.	
Pos: Left	Distance from the left edge of the label to the left edge of this field.	
Pos: Top	Distance from the top edge of the label to the top edge of this field.	

Property	Description	Values
Printing Field	Allows the creation of a non-printing field. Non-printing fields are commonly used in formula fields.	Yes/No
Rotation	The direction of this field relative to the top of the label.	0 90 180 270

Box Properties

Property	Description	Values
Field Name	The name of the field. Names must start with a letter. Other characters can be numbers, letters, periods, or underlines. It is important to give your fields meaningful names. **For Example** Gross_Weight Total_pieces	Field Name Conditions
Line Thickness	The width of the lines that define the sides of the box.	
Pos: Left	Distance from the left edge of the label to the left edge of this field.	
Pos: Top	Distance from the top edge of the label to the top edge of this field.	
Printing Field	Allows the creation of a non-printing field. Non-printing fields are commonly used in formula fields.	Yes/No
Rotation	The direction of this field relative to the top of the label.	0 90 180 270
Size: Height	The vertical span of the box.	
Size: Width	The horizontal span of box.	

Creating a Line or a Box

Select either the Line tool or the Box tool from the Loftware Label Manager Toolbox.

1. Select a starting point on the label and press the left mouse button.
2. Drag to create the desired size of the line or box.
3. Release the left mouse button to snap the line or box into place.

4. Select appropriate properties in the **Properties** box to change length, thickness, width, position, or rotation.

Barcode Properties

This table describes the properties that affect all barcode symbology.

Property	Description	Values
Data Source	The Data Source property specifies • Where the field will get its data from. • The rules for data entered in this field. Press the Ellipses (...) button to see the available data sources for this field.	See Configuring Data Sources
Field Name	The name of the field. Names must start with a letter. Other characters can be numbers, letters, periods, or underlines. It is important to give your fields meaningful names. **For Example** Gross_Weight Total_pieces	Field Name Conditions
Input Prompt	The prompt that will appear on the operator data entry screen. **For Example** Part Number Item Description	Text
Max # Chars	Maximum number of characters that will be printed for this field. If this field is filled in at print time, this is the maximum number of characters that the operator will be able to enter in the data entry screen.	Number
Padding	Padding allows you to specify how the field is to be filled if the operator enters a value shorter than the maximum allowed characters in the field. **For Example** A field has a maximum length of 9 and has the pad with Leading zeros option set. Operator enters: 1234 Data prints as: 000001234	None Leading zeros Leading spaces Trailing spaces Center with spaces

Property	Description	Values
Pos: Left	Distance from the left edge of the label to the left edge of this field.	
Pos: Top	Distance from the top edge of the label to the top edge of this field.	
Printing Field	Allows the creation of a non-printing field. Non-printing fields are commonly used in formula fields.	Yes/No
Rotation	The direction of this field relative to the top of the label.	0 90 180 270
Symbology	Select the symbology (or type) of the barcode. **Note:** The properties below this property will change depending on the selected symbology.	Barcode Symbology

Other Editing Methods

Loftware Label Manager provides several methods for editing label fields. In addition to changing values using the **Properties** box, you can use:

The Menu Bar

The Edit, View, Insert, Position and Options functions all allow you to manipulate fields in various ways.

The Positioning Toolbar

The Positioning Toolbar helps you align multiple fields simultaneously. Hold your cursor over the icon to view its function. A description of the function is also displayed in the status bar.

Related Information
Toolbar buttons and their function are described in the *Design Mode - Menu Bar, Toolbars, and the Toolbox* section of this guide.

Moving Fields

- Keyboard arrow method - Select a field using your mouse cursor and move it by using the arrow keys on the keyboard. To move multiple fields, hold the Ctrl button down, click the additional fields, and move them by using the arrow keys.
- Point-and-click method - Use the mouse to resize and move fields by using a click and drag method. You can use this method to copy or delete fields as well.

Regardless of the editing method you choose, changes in field properties are always reflected in the **Properties** box. In other words, the **Properties** box automatically gives youup-to-the-minute information about the characteristics of every field regardless of the editing technique.

Using the Lock Tool Menu Command

Use the Lock Tool menu command to make it easier to drop two or more identical fields into a label in succession. For example, you may need to drop eight barcodes into the same label.

To activate the Lock Tool:

1. Select the Options | Lock Tool menu command.
2. Select the appropriate tool from the Loftware Label Manager Toolbox (for example, barcode).
3. Point and click in the label design area to create the first field, notice that the selected tool (for example, barcode) remains locked down.
4. Continue to point and click until all of the fields are added.
5. Select the Options | Lock Tool menu command to unlock the Toolbox.

Modifying Fields

Loftware Label Manager provides several convenient methods for manipulating fields on your labels that allow you to:

- Change the size of a field
- Move a field from one position on a label to another position on the label
- Select and edit multiple fields simultaneously
- Edit any property value (for example, font, symbology, height, width, or position)

In most cases, it is more efficient to use the editing capabilities of the **Properties** box to manipulate your fields. Options in the **Properties** box allow you to make very precise edits as well as see the property choices available for a selected field.

As you become comfortable with Loftware Label Manager, you may discover a few convenient shortcuts using other editing methods, all of which adhere to basic Windows conventions. These methods include:

- Using menu commands
- Using the Loftware Label Manager toolbar tools
- Using the Positioning toolbar tools
- Using the mouse to move, copy and resize fields

Erasing Mistakes Using the Undo Command

- If you make a mistake when designing or editing a label, you can use the Edit / Undo command or the Ctrl + Z shortcut key to reverse the last action.

- Loftware Label Manager has a multiple level Undo, which allows you to undo several previous actions, depending on the type of editing you are doing.

Deleting a Field

Loftware Label Manager provides four methods for deleting a field from a label:

- Select the field you wish to delete, and click **Cut** in the Loftware Label Manager toolbar.
- Select the field you wish to delete; right click, and then select **Cut** from the **Edit** menu.
- Select the field you wish to delete; press the **Delete** key on the keyboard.
- Select the field you wish to delete; select **Delete** from the **Edit** menu on the menu bar.

Field List Creation

The Field List selection feature in Loftware Label Manager provides you with the ability to constrain the field names on a label to a pre-defined list. This is very helpful in LPS systems where only certain data is passed to the label. Field lists are also used for auditing what has been printed in your label. The field names and data in the LPS pass file must match those in the label. To create a constrained list, (saved with an LST extension) complete the following steps:

1. Open Notepad or a similar text editor.
2. Type in the field names that you would like the label constrained to. You can also specify the maximum characters allowed for any or all of the fields.

For example

```
Name,14
Address1
Address2
City
State,2
Zip
Part_Number,8
Part_Description
Part_Color
Part_Weight
```

Note: The maximum field length specified in the LST file cannot be changed in the **Properties** dialog.

When the maximum field length is included, the field name and the maximum field size must be separated by a comma; spaces are not allowed.

3. Save the file in the Loftware Labeling directory with an LST extension (For Example: a_field2.lst).
4. If you are using Notepad, select **All Files** in the Save as Type section.
5. Click **Save**.

When you click the New Label icon in LLM design, the following is displayed if there is more than one field list available. If there is only one field list, new labels will automatically default to using it, unless None is selected.

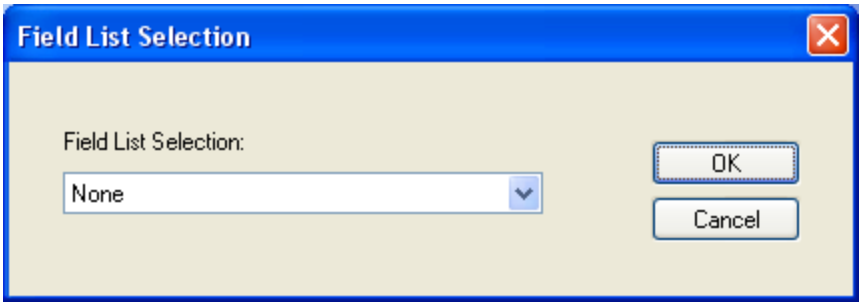

Figure 4.4: Field List Selection

Printing and Embedding Characters

Embedding a Symbol onto your Label Format

1. Insert a text field on your label. The text field can be a fixed field or variable, depending on whether the information is entered at print time or always stays the same.
2. Choose True Type Fonts as the **Font Category** from the **Properties** box. Then determine which TrueType Font you want to use on your label and indicate this as the font name.
3. Use the Windows Character Map to determine the sequence of characters to use to represent the symbol.

For Example

If you are using Times New Roman, the sequence is Alt-0174 for the Registered Trademark symbol.

Note: These must be typed from a numeric keypad.

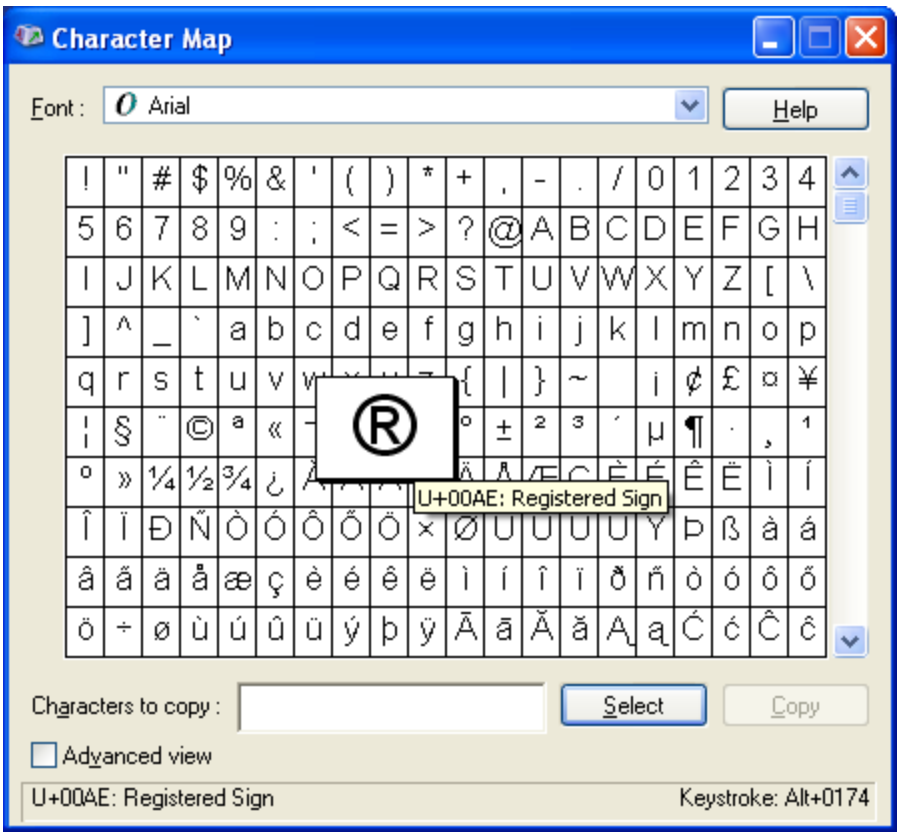

Figure 4.5: Character Map window

Embedding the Registered Trademark symbol onto your Label Format

1. Insert a text field on your label. The text field can be a fixed field or variable, depending on whether the information is entered at print time or always stays the same.
2. Choose an internal font that includes the registered trademark symbol. (Look at your printer manual under extended character sets.)
3. Enter the character sequence for this character when printing the label (based on the character map for the internal font). For example, the keyboard ALT sequence to print the registered trademark ® character using a Monarch printer is Alt-0174, if you have selected the ANSI Symbol Set in Printer Setup.

Note: If you are using a database to store your information, you may be able to use the same ALT sequence to store the desired character. Be aware that some database formats do not store or retrieve High ASCII characters reliably.

Loftware® Label Manager – LLM®

Figure 4.6: Printing the high ASCII registered trademark character

Note: For more information on International Character Sets, International Keyboards and configuring Loftware Label Manager parameter settings, refer to the International Printing section.

Printing High ASCII characters using TrueType Fonts

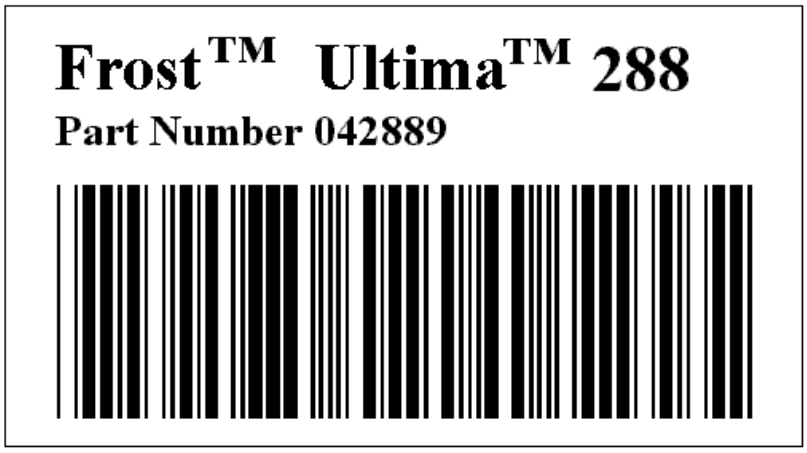

Figure 4.7: Label with trademark symbol, a high ASCII character

The trademark symbol (™) is used in many applications. This symbol is generally not included in extended character sets resident on thermal printers. It can be added to your label by using a Windows TrueType Font sent as a bitmap to the printer.

Printing High ASCII characters using Internal Printer Fonts

Note: If your printer is connected to a serial (COM) port, it must be set to 8 data bits in order to access the extended character sets.

Many applications require the registered trademark (®) symbol to be displayed on a label. You can add the symbol by creating a graphical image in Windows Paintbrush or other graphic software. With some thermal printers, this symbol is part of an extended character set.

Pass Through Fields

A Pass Through field allows you to fully define a label field with the field's data using printer language. You can insert printer language directly into a field and pass commands through the Loftware native driver directly to your printer. This may allow you greater control over a barcode, and give you the ability to include options that may not be supported by Loftware's native driver.

Supported Field Types

You can create a Pass Through field using the following field types.

- Label and Text Fields
- Barcodes (excluding human readable fields)

- RFID Tags using Keyboard Datasource
- Images with non-fixed data sources

Note: Do not use Paragraph fields for Pass Through.

Lines, boxes, and barcode and RFID human readable fields configured as Pass Through fields will be discarded (not printed) from the label.

Set **Force Max # Chars** to **Do Not Force Max # Chars** to avoid having Pass Through commands truncated.

Supplying Data

There are no restrictions on how you populate fields with the printer commands that you want to pass through. You could use fixed data, pass commands as part of a script, or get commands from a file. You can even enter commands in the text of a label.

XML Files

When passing data to a Pass Through field with an XML file, you must use escape encoding, (#xhh;) when inserting low ASCII characters. See ASCII Characters in this guide for more information.

Supported Drivers

You can use Pass Through fields on labels using the following drivers/printer languages. Consult the Programming or Printer Language guide for your printer for information on printer commands.

- IPL
- PCL5
- ZPLII

Note: Sample labels for each supported language are included in the <Program Files Folder>\Loftware Labeling\Labels\Samples\Passthrough folder.

Loftware's Professional Services Group can help you determine if Pass Through fields might help you solve a particular business problem, and they can create customized Pass Through fields based on your Loftware Print Server implementation and available hardware.

Creating a Pass Through Field

You create Pass Through fields by using a reserved field name prefix (ptfield). You can append a field name to the prefix to create meaningful names. For example: ptfield_Aztec could be used to identify an Aztec barcode. Using a prefix to identify a Pass Through field allows you to create multiple Pass Through fields on a label.

Note: Sample labels for each supported language are included in the <Program Files Folder>\Loftware Labeling\Labels\Samples\Passthrough folder. You can start by opening one of the sample labels, or by creating a new label.

To Create a Pass Through Field

1. Create a label, and select your printer model.

   Note: Pass Through fields are supported on printers that use IPL, PCL5, and ZPLII.

2. Add a field to the label.
3. Change the field name to ptfield_ and append an identifier name.
4. Create a data source, and enter the appropriate printer commands for the field.

Pass Through in XML Files

When passing data to a Pass Through field with an XML file, you must take two additional steps when inserting low ASCII characters in the XML.

- Use the Loftware escape encoding, (#xhh;) around the ASCII character. See ASCII Characters in this guide for more information on using the escape sequence.
- Create a field with a script data source on the label referenced in your XML. The script field does not need to be visible or have an actual script.

Loftware's Professional Services Group can help you determine if Pass Through fields might help you solve a particular business problem. They can help you create customized Pass Through fields based on your Loftware Print Server implementation and available hardware.

Audit Files

All Loftware modules have the ability to capture label information that is requested and printed. Audit Files are set up in Design Mode. The information gathered can be useful for tracking label production information.

All printing activity is recorded and placed in a Loftware Label Manager subdirectory Audit. File locations can be changed by selecting the **Options** | **File Locations** | **Audit Files**.

Enabling Audit Files

Select **Options** | **Audit Setup** from LLM Design Mode. If this is the first time you are using Auditing, the **Auditing Setup** window appears with **Disable Auditing** (the default) selected.

The Audit Mode Section

Option	Description
Global Auditing	This setting allows you to set up your audit files in a specific way.
Legacy Auditing	If you have recently upgraded from a version prior to 6.1 and used Auditing, all your settings for Audit Files have been carried over automatically.
Disable Auditing	This setting disables all auditing functions.

The remaining sections of this window are used with Loftware's Global Auditing function.

Configuring Global Auditing

Global Auditing is a customizable label reporting function which is used to generate a database of selected label printing information. Global Auditing is field-based, and unlike Legacy Auditing which audits all fields for all labels, only selected fields are audited. This can make parsing the data easier. Global Auditing allows the user to audit all or some of the fields of printed labels, both fixed and variable. The report can be uploaded to a host system, or imported into a database or spreadsheet program.

All printing activity is recorded and saved to a Loftware Labeling subdirectory named **Audit**. You can change the default location by selecting the Options | File Locations | Audit Files. Audit files are generated for each print job.

If you have selected **Global Auditing** in the **Audit Mode** section, then the other sections of this dialog box must be configured as well.

Enter Field Name

This section allows you to enter Field Names that are to be added to the Audit File Audited List. The field names are the names you gave the variable or fixed text fields on your label. Type in the field name (s) in the text box, and click **Add**, or press **Enter**. The field name is added to the Audited List.

Available List

This section contains a list of the system fields. System fields are those fields that are not usually part of the printed fields common to most labels but are part of the system's tracking.

Information	Description
Application	The application that printed label: For example, On-Demand, Design.
ComputerName	The network name of the computer, not the operator name
Date	The date the label request is received.
Duplicates	Number of duplicate labels produced with the same serial #.
JobName	The name of the job, only applicable for LPS users.
KeyString	The license string of the Loftware Software.
Label.DateTime	The date and time that the label was saved.
Label.Instance	The installation environment (instance) that the label is configured for.
Label.User	The user that saved the label.
Label.Version	The version number of the label.

Information	Description
LabelName	The file name of the label file, for example "gm.lwl."
LabelName.Id	The identification number from IBM Filenet.
LabelName.Version	The major version of the label from IBM Filenet.
PrinterName	The Printer Alias, if created, in printer configuration
PrinterNumber	The number of the printer from the Device Configuration list window.
Quantity	The quantity printed.
Time	The time the request is received. Actual time of printing may be delayed if the system is busy.

Field Information – List Files

If you create list files (LST) to constrain the available fields in Design Mode, the content of these files are listed in alphabetical order in the **Available List** in Options | Audit Setup. Multiple LST fields that have identical field names are listed only once. The LST file can be helpful in that it prevents a misspelled field name from being added via the **Enter Field Name** box, and it speeds up the creation of auditing in general. Taking a little time up front to create these lists can time-saver in the long run.

To move System fields or LST fields from the **Available List** to the **Audited List**, highlight one or more items on the left column, and click the right-arrow button, or double-click the field(s). See the following example:

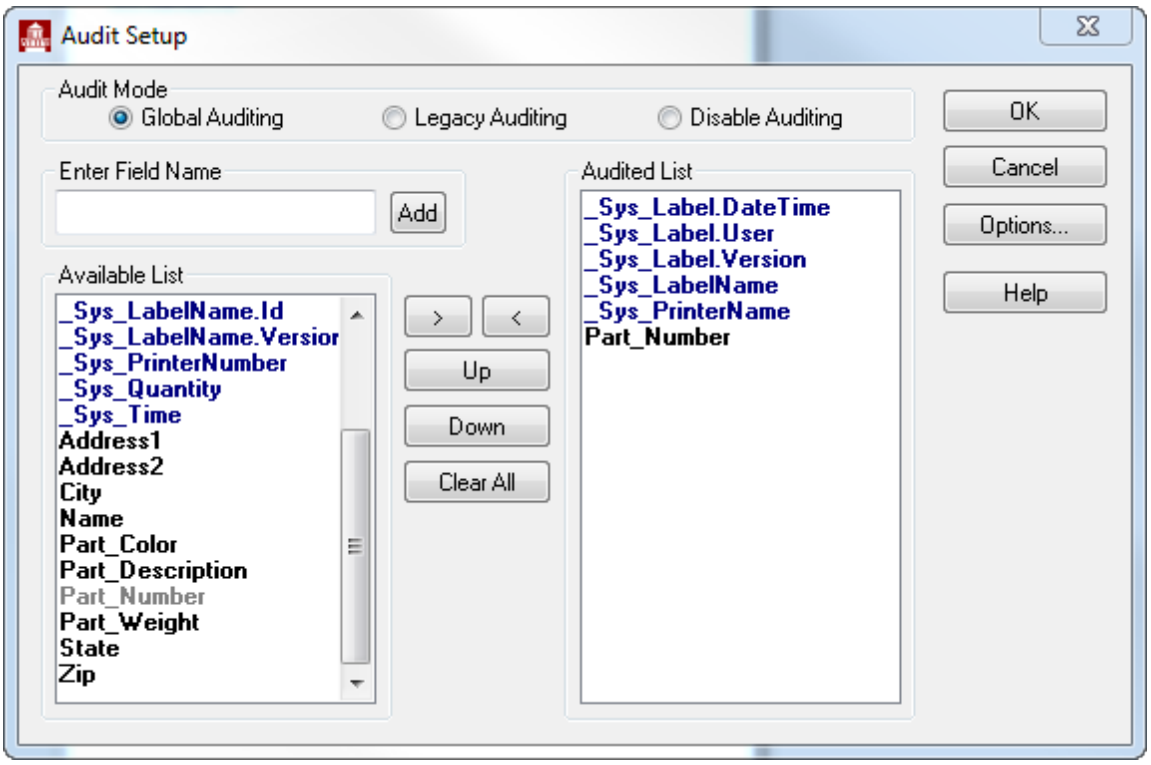

Figure 4.8: Global Auditing System and LST fields listed and added to the Audited List.

Audited List

This list represents the actual fields which are to be audited in chronological order. You have four movement options available for fields displayed in this list.

Action	Response
Click the left arrow	Moves the System field(s) back to the Available List. Only system fields are moved, not fields that you have added via the **Enter Field Name** section. Any selected user-added fields are deleted.
Click **Up**	Moves the selected field(s) up one line, allowing control of the order of fields in the Audit File.
Click **Down**	Moves the selected field(s) down one line.
Click **Clear All**	Clears All the fields from the available list. The System Fields are moved back in to the Available List, and the User-added fields are deleted.

Global Audit Options

To configure Global Auditing options, click **Options** in the **Audit Setup** window. The **Global Audit Options** dialog box is displayed.

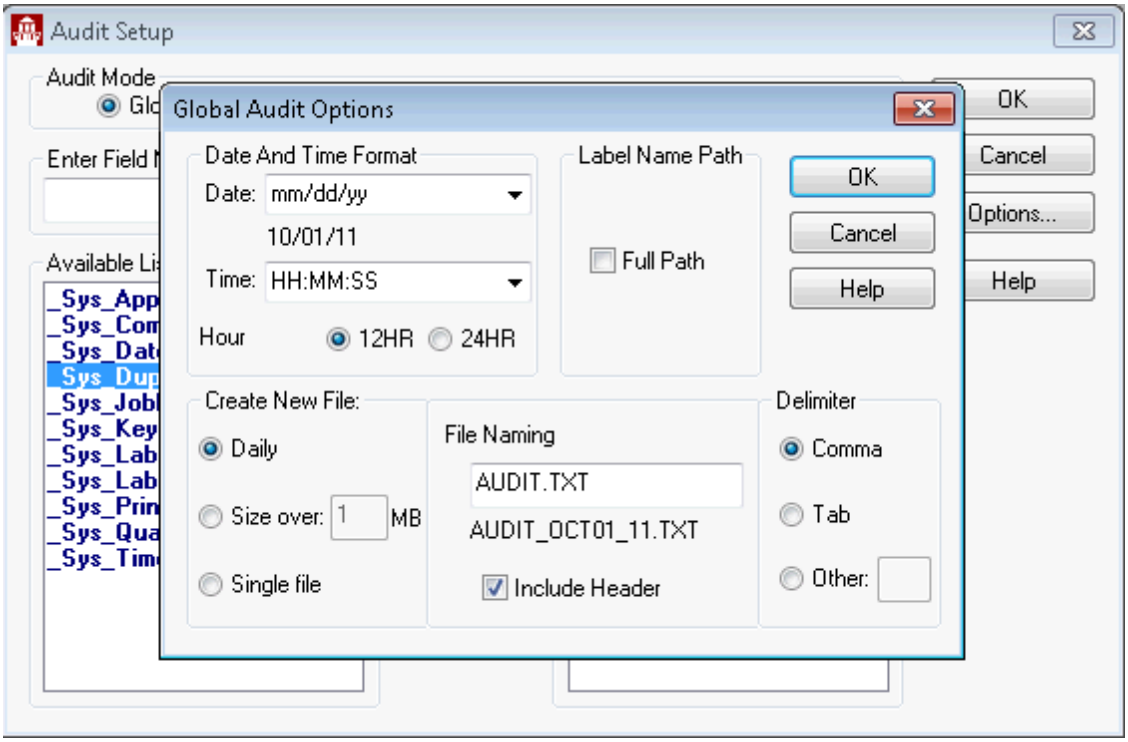

Figure 4.9: Global Audit Options

Date and Time Format Section

This section allows you to choose the format that you want the Date and Time fields displayed in the Audit files. The drop-down lists provide different format configurations, but you may type in configurations that are not displayed in the drop-down list as well.

Key code	Description
d	numeric day (displayed as a single digit; for example 2)
dd	numeric day (displayed as a double digit; for example 26, or 02)
ddd	alpha day (abbreviated; for example Tues)
dddd	alpha day (full; for example Tuesday)
h	hour (displayed as a single digit; for example 2)
hh	hour (displayed as a double digit; for example 02, or 14)
mm	minute (or month, displayed as a double digit; for example 45 or 06.)
mmm	month (alpha-abbreviated; for example Mar)
mmmm	month (full alpha spelling; for example March)
ss	second (displayed as double digit, for example32, or 08)
yy	year (displayed as double digit, for example 03)
yyyy	year (full display, for example 2003)
WW	week no. (Loftware uses the first 4-day week as week 01. Weeks start on Monday)
JJJ	day no. (Julian calendar, for example, Jan 1 = Day 001)

Date/Time Option Examples

Custom Format	Printed
mm/dd/yy	Program default = 11/13/03
d-mmm	13-Nov
d-mmmm-yyyy	13-November-2003
ddmmyy	131103
h:mm:ss	4:15:55
hh:mm:ss	Program default = 04:15:55
m*d*yy	11*13*03

Hour Format

Either 12HR or 24HR (Military Time) are available.
24HR displays 2:00 p.m. as 1400 hrs.

Label Name Path Section

If you would like the full path to the label displayed in your Audit File, select **Full Path**. By default the full path is not displayed in the Audit File. The full path to the label may look something like: C:\<Program Files Folder>\Loftware Labeling\LABELS\Label1.lwl, whereas if this option is unchecked, the path would be: Label1.lwl.

Create New File Section

The options listed in this section give you control over the way in which new Audit files are created.

Option	Description
Daily	If this option is chosen, a new audit file is created every day. This is the default option and may be a viable choice for those who are trying to monitor what products, companies or labels are being generated on a daily basis.
Size over	This option allows continuation of the file until a user-defined size has been reached. Perhaps 1MB is approximately 1 week's worth of labels, and you want to keep a weekly count (more or less) of labels, then this choice may work well for you.
Single File	This option creates a single audit file which is added to every time a label is created.

Note: Use caution with these options, so the Audit File does not grow too large.

File Naming Section

Type in the first part of the file name in the text box. The file name displayed below the text box is dependent upon when you have chosen to have a new file created.

For Example

If you have selected **Daily** in the Create New File Section, and typed in the naming convention Shipping.CSV, the resulting file name is Shipping_13NOV03.CSV.
If you chose the **Size over** option , the resulting file name is Shipping_001.CSV.
If **Include Header** is selected, then a header containing the names of the audited fields is written at the top of the audit file. Including a header in your CSV files is most helpful when reviewing your audit files, especially if you are importing your files into a spreadsheet program such as Microsoft Excel.

Delimiter Section

The are three options in this section. The choice made determines how the data in the Audit File is separated. Comma delimited is the default and is the most commonly used delimiter; however, you may choose Tab, or create a delimiter by choosing Other and typing in the desired symbol.

Example Audit File with a Header and Comma Delimitation

```
Date,_Sys_LabelName,_Sys_ComputerName,Part_Number, Color, Description,Kanban,Qty_
Shipped,Ship_Weight,FDTNo
```

```
11/13/03,Ford.lwl,Mark2000,F4000,Black,LDoorhandles,,250,75,FDT2x
11/13/03,Toyota.lwl,Mark2000,T355,Black,LDoorhandles,,250,80,
11/13/03,GM.lwl,Mark2000,G80,Silver,LDoorhandles,H28456739,250,75,
11/13/03,Ford.lwl,DonXP,F6000,Black,RDoorhandles,,250,75,FTD4x
11/13/03,Toyota.lwl,DonXP,T8000,Blue,RDoorhandles,,250,80,
11/13/03,GM.lwl,DonXP,G70,Silver,RDoorhandles,H28456740,250,75,
```

The previous example displays printed automotive labels. The header of the audit file displays the name of the fields that have been added to the Audited List. The list below the header displays the data within each of the named fields. In this case, each of the labels have some similar fields, but not all the fields are found on each label. If a field designated for auditing is not a part of a label, a comma is added as a placeholder. The audit file can easily be transferred into an Excel spreadsheet, and in a future version of Loftware, the file may be written to an ODBC datasource as well.

Additional Global Auditing Information

Option	Description
Labels with Layouts	Loftware Auditing produces a separate audit record for each layout label instead of one long record of the layout labels.
Images	Use image file name instead of image data itself, for example, csa300.pcx
Non-Printing Fields	You do have the ability to include Non-Printing fields in your Audit File. Adding an operator name, for example, would help in keeping track of that individual's daily part production.
Fixed Fields	Fixed fields may also be added to the audit file list. Perhaps a fixed division number is printed on a particular label, and adding this field would keep a per-division count of labels and the included pertinent data.
Security	Under Options | Preferences | Security in Loftware Design Mode, Administrative locking of Audit Files with the addition of a password is possible.

Related Information
For other auditing options, refer to Global Auditing in this guide.
If you are using the LPS, see the Housekeeping Tab section of the *Loftware Print Server User's Guide* for information on managing the size of audit files.
Review the CSV rules found in the *Loftware Print Server* section of the *Loftware Print Server User's Guide*.

Legacy Auditing

To use Loftware's audit function as it was before version 6.1, then select **Legacy Auditing**.

Why would you use Legacy Auditing? Perhaps you have already set up a program to parse the data from your auditing setup, and things are working well.

Changing Legacy Auditing

If you want to change the Legacy settings, choose Legacy Auditing in Auditing Setup and click **Options** to make the changes. Audit files are generated for each print job, retained on a daily basis and have

these characteristics:

- Audit file names are in the format mmmdd_yy.txt (The .txt extension ensures easy file import into spreadsheet and database applications.)
- Barcode fields have two Audit file entries, one for the barcode data and the second (fieldname. HR) for the human readable data.

Examples of Audit files

Produced after printing two different records from the On-Demand Print Module. AUDIT.LWL was the label format used.

Note: Status conditions of all printing are reported.

Example 1

Default Audit settings in the Audit File: name is Jan22_03.TXT

```
Wed Jan 22 08:45:17 2003,RL00001048,App:ODP,C:\AUDIT.LWL:PRINT
DATA:,Barc0000=12312312,Barc0000.HR=12312312
```

Example 2

Show Print Requests and Show Print Status enabled in the Legacy Options dialog box ; name is Apr22_02.TXT

```
Wed Apr 22 08:52:34 2003,RL00001048,App:ODP,C:\AUDIT.LWL: REQUEST: Printer:1
Quantity:1 Duplicates:1
Wed Apr 22 08:52:36 2003,RL00001048,App:ODP,C:\AUDIT.LWL: STATUS: Native; StatusId:0
ErrorId:0 ErrorString:
Wed Apr 22 08:52:36 2003,RL00001048,App:ODP,C:\AUDIT.LWL: PRINT DATA:
Barc0000=12312312,Barc0000.HR=12312312
```

Parameter File Settings for Audit Files

To control the amount of data output to the Audit Files, adjust the parameter file settings from the **Legacy Audit Options** dialog box:

- Show Print Requests and Statuses in Audit Files
- Show Print Statuses in Audit Files
- Show Printed Data in Audit Files
- Show Non-Printing Data in Audit Files

Note: The **Show Non-Printing Data in Audit Files** only shows non-printing data for Zebra labels.

- Don't Audit Fixed Fields
- Custom Field Delimiter (such as a comma)
- Custom File Extension (such as .txt)

Label Versioning

If Label Versioning is turned on in your system, changes made to individual labels are numbered and tracked.

Label Comments

Label comments can be used to communicate changes made to a specific version of a label. While not required, label comments can be used with Label Versioning to help with change tracking. You can require comments or make them optional when you enable label comments.

Note: If you were using Label Comments previous to using Label Versioning, any comments you made prior to enabling Label Versioning will not be visible from the Open dialog. You can view previously entered comments from the Label Setup and Properties dialog.

Fixed Images

While images are not separately version tracked in LPS or LLM, you can chose to embed fixed images with a label file.

Promotion

Promotion is the act of moving a label from one versioning-enabled instance to another versioning-enabled instance. One example is moving a new label into a Production environment (LPS) from a Development environment (Design).

In order to promote a label, you must be logged into the system you are promoting from as a user with access to the folder to which you are promoting. Typically this means that the user promoting should be a member of the Loftware_Group user group on the system to which the label is being promoted.

Using with Existing Labels

With Label Versioning on, when you save previously created labels, the version number increments from the last version saved. For example, if you saved five revisions of a label prior to turning on Label Versioning, when you next save the label, the version number will be six. You can view information associated with the previously created version from the Label Setup and Properties dialog.

Enable Label Versioning

You can enable Label Versioning from the LLM-WIN32 Preferences window.

1. From Design 32, select Options | Preferences or press F8.
2. Expand **Design Options**.
3. Select **Allow Label Versioning**.

You can use Label Comments with Label Versioning.

See the *Loftware Print Server and Label Manager Installation and Configuration Guide* for information on configuring Instances to use when promoting labels.

Manage Previous Versions of a Label

You can use previous versions of a label to:

- Create a new label based on a version of an existing label.
- Revert an existing label to a previous version.

Prerequisites

Enable Label Versioning

Open a Previous Version

1. Select File | Open. The **Open** dialog appears.
2. Double click the version you want to open from the **Version History** table.

Note: Label versions created prior to Label Versioning being enabled are not available.

3. A message will appear indicating that you are opening a version controlled label. Click **Yes** to open a read-only copy of the label.

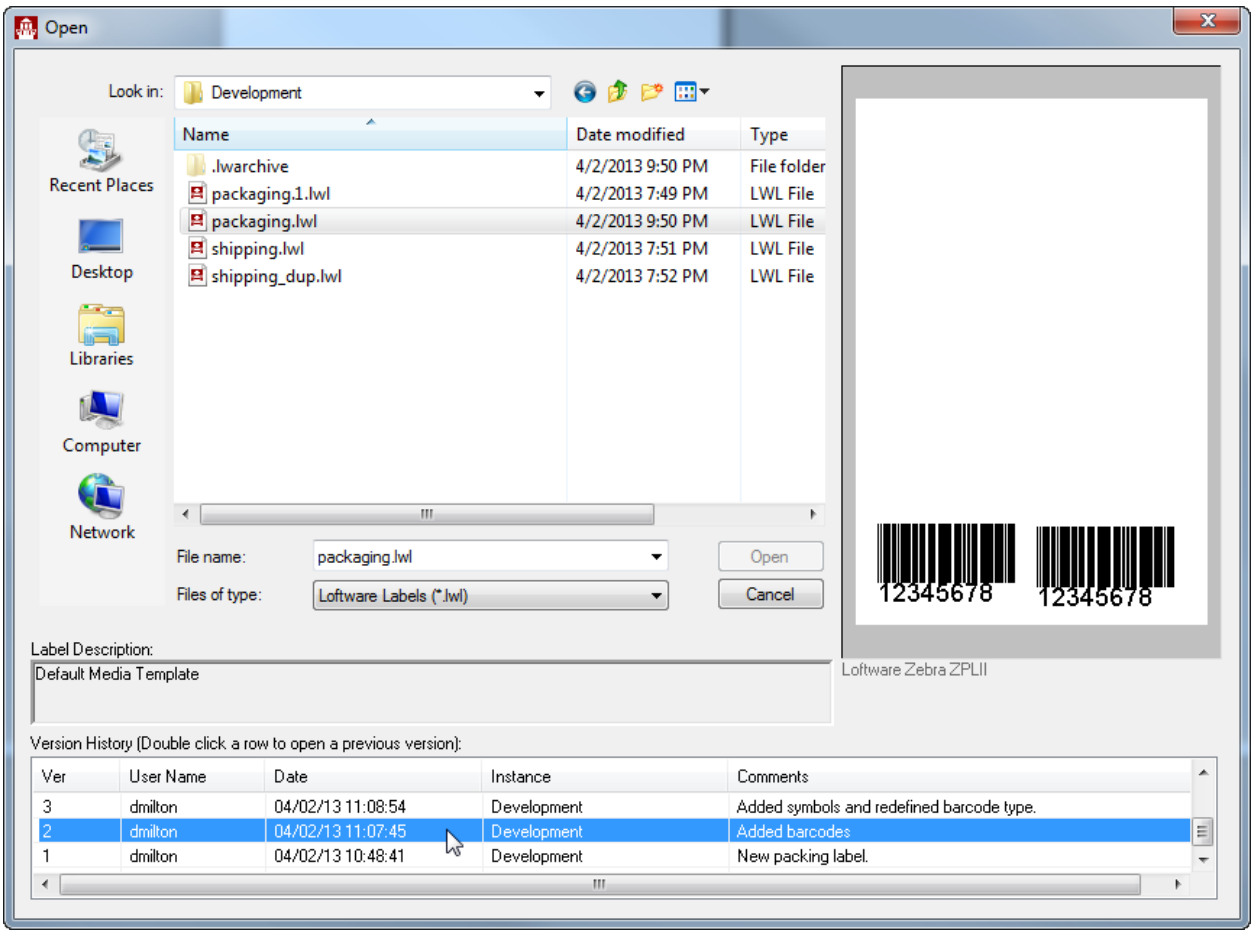

Figure 4.10: Open dialog with previous version selected

Save Previous Version as a New Label

1. Select File | Save As, and enter a name for the new label.
2. Click **OK**. If Label Commenting is enabled, the **Label Comment** window opens.
3. Enter a description of the new label in the Label Comment field.
4. Click **OK**.

Revert an Existing Label to the Previous Version

1. Select File | Save As, and select the existing label that you want to revert.
2. Click **OK**. The **Confirm Save As** window opens.
3. Click **Yes**. If Label Commenting is enabled, the **Label Comment** window opens.
4. Enter a description of the reason you are reverting to a previous version, and click **OK**.

Promote a Versioned Label

Use these procedures to move a versioned label from one instance to another.

Prerequisites

- Enable Label Versioning on both systems.
- Configure Instances for promotion.

See the *Loftware Print Server and Label Manager Installation and Configuration Guide* for more information on configuring instances.

See the *Loftware Print Server User Guide* for information on promoting labels using a command line utility, LWVersionUtility.

Promote a Label from Design

1. Open the label that you want to promote in Design.
2. Select File | Promote, and select the instance to which you want to promote the label. If Label Commenting is enabled, the **Label Comment** window opens.
3. Enter a description of the reason you are promoting this label, and click **OK**.

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Loftware's RFID resource offers the ability to design and create EPC RFID Smart Labels, enabling implementation of mandates set forth by Wal-Mart and the Department of Defense. It provides the most-commonly used EPC encoding schemes for transparently programming RFID inlays embedded in label substrates. Loftware allows encoded smart labels to be driven to many supported UHF RFID printers.

Loftware extends its RFID solution to utilize RFID tag block data structures and support EPC and DoD data constructs for both HF and UHF schemes. Memory on RFID smart labels is segmented into blocks. Depending on the tag type, blocks can vary in number and size. Loftware addresses these differences by providing access to each block to accommodate additional data. Data can be written for supported UHF and HF labels on a block by block basis.

With businesses poised to tackle migration to Generation 2 tag types while maintaining a multi-protocol RFID environment, Loftware extends support for UHF Class 1 Generation 2 tags (C1G2). Loftware provides access to C1G2's expanded block structure that includes a higher level of security. It has added several RFID printers that support the C1G2 protocol to its device line.

This section guides you through creating RFID smart labels. It demonstrates block configuration using EPC or DoD construct. It includes many examples with sample data to help you through the learning curve and to get you up and running quickly.

Keep the following in mind as you expand your tracking system to include RFID:

- Loftware supports creating RFID Smart Labels and will continue to support legacy barcode labels.
- Labels can be designed in such a way that no new data is necessary for EPC codes to be generated from existing data. Changes to your label are required, but changes to your 'print time' system may not be necessary.
- In general, although familiarity with the EPC or US Department of Defense tag specifications is encouraged, specific knowledge is not needed. All EPC/DoD intricacies are handled automatically.
- Although normal barcode labels can be printed on any printer with any license, the Loftware Premier Plus RFID is required to enable the programming of RFID Smart Labels.
- You must have a Loftware-supported RFID printer to print a programmed RFID smart label.

Setting up RFID Labels

When setting up RFID labels in Loftware, you need certain information in order to choose the right options from the different Loftware dialogs. These include:

What is the target RFID device?

For RFID labels, this is a Loftware-supported RFID printer that will print the labels.

In order to encode data on RFID labels, an RFID device must support specific RFID commands. Some RFID devices exclusively support UHF tag types. Some printers support only HF tag types; a few support HF and UHF tag types.

What is the Tag Type?

The available choices depend on the selected target RFID device. Tag Type determines the number and the size of user-programmable blocks.

Supported UHF Gen 1 tag types

- UHF 64-bit Class 1
- UHF 96-bit Class 1
- UHF 96-bit Class 0+
- UHF UCODE EPC 1.19
- UHF ISO 18000-6B

Supported UHF Class 1 Gen 2 tag types

- Impinj UHF Gen2 (Monza)
- TI UHF Gen 2 (Dallas)

Supported HF tag types

- Philips HF I-Code
- Philips HF I-Code ISO 15693
- TI HF Tag-it
- TI HF Tag-it ISO 15693

What type of tag display will the data be written to?

This is the actual physical tag that will be programmed and attached to the item. The available choices depend on the selected target RFID device. The choices include the following.

Alien 9334	Alien Castle	Alien I2 Tag
Alien M Tag	Alien Omni-Squiggle	Alien Squiggle
Alien 96 bit Squiggle	Alien Gen 2 Squiggle	Avery AD410
Avery AD220 Runway	Avery AD 420	Avery AD612
Avery AD620 Triflex	Avery AD622	Avery AD812
Avery AD820	Generic Transponder	Impinj Gen 2 (Monza) Banjo

Impinj Gen 2 (Monza) Propeller	Impinj Paper Clip	KSW Excalibur
KSW Templar Gen2	Omron Wave	Philips I-Code
Philips I-Code ISO 15693	Rafsec 3000734	Rafsec 3000888
Rafsec Dogbone	Rafsec Frog	Rafsec Psychedelic
Rafsec Short Dipole	Rafsec Square Dipole	RFIdentics Flexwing
RSI Jumping Jack	Symbol Four T	Symbol Trident
Symbol X1060	Symbol X2020	TI Gen 2 (Dallas)
TI Tag-it	TI Tag-it ISO 15693	

What type of data will be encoded?

This is the EPC or DoD Encoding Type or the URI data. Each encoding type has its key benefits and reasons for usage. Each requires specific information that you may or may not have on hand, for example, a Company Prefix number, a Serial Number. Class 1 Gen 2 tags require a 96-bit EPC identifier; 64-bit encodings cannot be used.

HF and UHF RFID

Loftware supports HF and UHF encoding schemes. This utilizes block structures of HF and UHF tags, which can vary, not only from one frequency to another, but many times from one tag type to another. We encourage you to refer to external sources for more information on the different RFID tag types.

Loftware usage depends on the types of labels you wish to encode.

Most RFID systems in the Ultra High Frequency (UHF) band operate between 868 and 930 MHz. Loftware supports tags that comply with EPCglobal and DOD coding standards for UHF. They include UHF 64-bit Class 1, UHF 96-bit Class 1, UHF 96-bit Class 0+, UHF UCODE EPC 1.19, or UHF ISO 18000-6B. Loftware also supports UHF Class 1 Generation 2 tags. Tag types differ in the block layout as shown in the table below.

UHF Tag Type	Loftware Configurable Blocks
UHF 64-bit Class 1	2 blocks: PC- (Pass Code) - block size = 1 byte (Refer to Block Configuration for more information on the PC block.) EPC - block size = 8 bytes

UHF Tag Type	Loftware Configurable Blocks
UHF 96-bit Class 1	2 blocks: PC- (Pass Code) - block size = 1 byte (Refer to Block Configuration for more information on the PC block.) EPC - block size = 12 bytes
UHF 96-bit Class 0+	3 blocks: KC - (Kill Code) - block size=3 bytes EPC- block size=12 bytes USR - block size=13 bytes
UHF UCODE EPC 1.19	1 block #0 - block size = 12 bytes
UHF ISO 18000-6B	1 block #0 - block size = 200 bytes
UHF Class 1 Gen 2	4 blocks AP – 4-byte Access Password KP – 4-byte Kill Password EPC – 12 bytes USR – 32 bytes

Table 5-2: UHF Tag Types and Block Layout

	EPC Class 0+, Class 1 Gen 1	EPC Class 1 Gen 2
EPC data allocation	64 - 96 bits	96 bit EPC
Security	8-bit password	32-bit kill password (KP) 32-bit access password (AP)

Table 5-3: Comparison between Gen 1 and Gen 2 Tag Types

In addition, the C1G2 specification allows for expanded data structures in a user-defined memory bank. C1G2 tags have four banks of non-volatile memory: Reserved Memory, EPC Memory, TID Memory, and User Memory.

Reserved Memory – holds the tag's passwords: a 32-bit Kill password that allows a tag to be permanently disabled, a 32-bit Access password that allows a tag to transition to a secured state.

EPC Memory – contains a 16-bit CRC, a 16-bit Protocol Control, and an EPC.

TID Memory – Tag ID memory contains the tag manufacturer, model number, and other information added by the manufacturer (for example, the tag serial number).

User Memory – optional memory area – contains user-specified data.

Loftware allows access to C1G2 tag's Kill Password (KP), Access Password (AP), and EPC memory blocks.

RFID labels can be created in Loftware using the following tag types.

- UHF 64-bit Class 1
- UHF 96-bit Class 1
- UHF 96-bit Class 0+
- UHF UCODE EPC 1.19
- UHF ISO 18000-6B

Tag types available depend on whether these are supported by the target RFID device.

Supported High Frequency (HF) tag types include the Philips HF I-Code, Philips HF I-Code ISO 15693, TI HF Tag-it, and TI HF Tag-it ISO 15693.

HF Tag Type	Configurable Blocks	Other Available Block Configuration Settings
Philips HF I-Code	11 blocks: blocks 5 to 15 block size = 4 bytes each	Lock Tag After Writing, Overflow, EAS, AFI
Philips HF I-Code ISO 15693	28 blocks: blocks 0 to 27 block size = 4 bytes each	Lock Tag After Writing, Overflow, EAS, AFI, DSFID
TI HF Tag-it	8 blocks: blocks 0 to 7 block size = 4 bytes each	Lock Tag After Writing, Overflow
TI HF Tag-it ISO 15693	64 blocks: blocks 0 to 63 block size = 4 bytes each	Lock Tag After Writing, Overflow, AFI, DSFID

Related Information
Refer to the section on RFID Devices and Tag Types in the Printers and Labels section.

RFID Standards

Several organizations are involved in drafting specifications for RFID applications. EPCglobal® has focused its work primarily in the UHF range. The US Department of Defense (DoD) has mandated that its suppliers encode RFID tags using EPCglobal or DoD tag constructs.

GS1 EPCglobal Standards

Loftware follows the standards set forth by EPCglobal US, which is a subsidiary of GS1 US (formerly Uniform Code Council (UCC)). EPCglobal US creates the global standards which are necessary for tracking goods through the supply chain using RFID labels.

EPCglobal US standards and the equipment used to produce the RFID labels are still evolving. The next table lists the standards that were followed during the development of the Loftware RFID functionality. We strongly recommend that you obtain a copy of the specifications associated with these standards for your reference. As the standards evolve and new equipment becomes available, Loftware remains committed to providing service packs and new releases to keep up with these changes. Please check the online documentation on the Loftware Web site often for the latest changes.

Standard	Source
EPC Tag Data Standard	GS1 Web site
Global Trade Item Number (GTIN)	GS1 Web site
Serial Shipping Container Code (SSCC)	GS1 Web site
Global Location Number (GLN)	GS1 Web site
Global Individual Asset Identifier (GIAI)	GS1 Web site
Global Returnable Asset Identifier (GRAI)	GS1 Web site
EPC Class 1 Generation 2 UHF Air Interface Protocol Standard	GS1 Web site
EPC Application Level Events (ALE) Specification	GS1 Web site
Links current as of September 15, 2011	

Table 5-5: Specifications used by Loftware for calculating EPC RFID codes

DoD RFID Requirements

The US Department of Defense (DoD) has defined requirements and guidelines related to RFID tagging of shipments that its suppliers must follow. The DoD standards are available from the following online resources:

Standard	Location
DoD Suppliers' Passive RFID Information Guide	http://www.acq.osd.mil/log/rfid/r_suppliers_guide.html
Passive UHF RFID Tag Specifications & Requirements DoD EPCglobal DoD non-EPCglobal	http://www.acq.osd.mil/log/rfid/index.htm

Table 5-6: Resources for DoD Specifications

The DoD Guide explains how suppliers can encode tags using either the EPCglobal tag data construct or the DoD tag data construct. The choice depends on whether or not a supplier is a member of EPCglobal (or plans to join EPCglobal). Refer to the DoD Encoding Type section for additional information.

ISO Standards

ISO/IEC 15693 was originally intended to define the way RFID Contactless Integrated Vicinity Cards look and communicate. The standard has been adopted by major RFID companies as a guideline for transponders. The specifications it describes include transmission parameters and protocol. Its command set covers reading, writing, and locking data for single and multiple blocks.

ISO 18000 deals only with air interface protocol, the rules that govern how tags and readers communicate. Where EPC defines coding structure, Object Naming Service, physical implementation of tags and readers, and air interface, ISO 18000 is not concerned with data content or structure or the physical implementation of tags and readers. Tags made according to ISO 18000 are simply able to carry EPC data.

The ISO/IEC 15693 and ISO 18000 standards are available from the ISO Web site.

Loftware RFID Concepts

The following concepts will help you in using the Loftware RFID functionality. Please take the time to read these sections of this guide before continuing with RFID encoding.

Configuring RFID Devices

Data Sources for RFID Fields

RFID Devices and Tag Types

Loftware RFID Requirements

RFID License Requirements

In order to use Loftware's RFID capabilities, you must have the appropriate license. You may view your license from the Help | About screen in Loftware Label Manager.

To reiterate important RFID license information about using the Loftware RFID functionality:

- You must have the Loftware Print Server Premier edition with the RFID option.
- You must have an RFID Printer license to print RFID Smart Labels. You may use an RFID Printer license to drive a non-RFID printer, but not vice versa.

Please contact Loftware's Customer Service at (603) 766-3630 to purchase the RFID Solution or additional RFID printer seats.

Related Information
Refer to the *Loftware End User License Agreement* for more information. A PDF of this document is available at the root level of your installation CD or download package.

RFID Device Requirements

Loftware adds support for RFID devices as they become available.

You must have a Loftware-supported RFID printer in order to print a working RFID Smart label. A list of supported RFID devices can be found in the Printers and Labels section of this guide, as well as on the Tech Support section of the Loftware Web site.

- Make sure that the label stock that you choose is approved by your device manufacturer.
- Be sure you understand how your device handles tag programming errors and bad tags. For example, most manufacturers have several settings for retry or overstrike.
- Familiarize yourself with how to set up your device for RFID. Take any training courses that you can to better familiarize yourself with the hardware.
- The Printers and Labels section of this manual has more information on specific RFID settings that can be set via the software for the target RFID device. However, the documentation that comes with your device should be your primary source of information.
- The Printers and Labels section also has information on Loftware RFID Devices and the Tag Types each supports.

Creating RFID Smart Labels using the New Media Wizard

This section describes how to set up RFID smart labels.

1. Select File | New. This launches the New Media Wizard which will guide you through the step-by-step process of creating a new label or an RFID label.
2. From the Welcome screen, click **Next**. This opens the **Media Type Selection** page of the New Media Wizard.

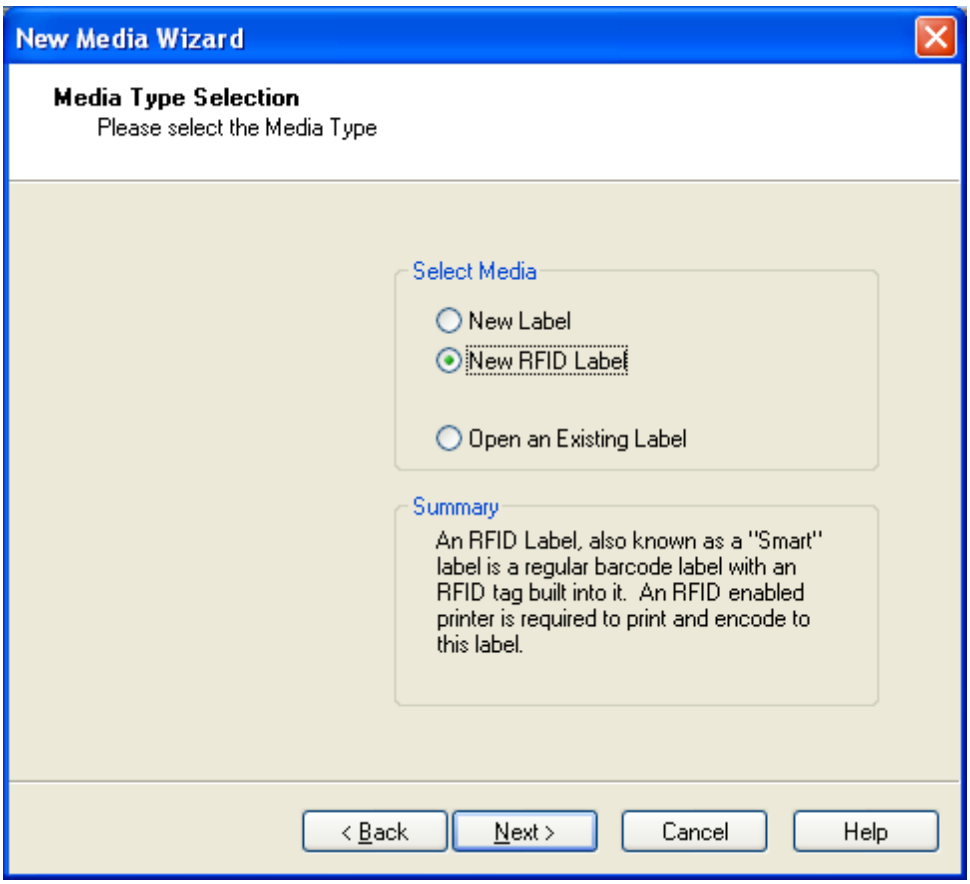
New Media Wizard
Media Type Selection
Please select the Media Type
Select Media
New Label
New RFID Label
Open an Existing Label
Summary
An RFID Label, also known as a "Smart" label is a regular barcode label with an RFID tag built into it. An RFID enabled printer is required to print and encode to this label.
< Back
Next >
Cancel
Help

Figure 5.1: Select the Media Type

3. From the **Select Media** section of the New Media Wizard, select **New RFID Label**. Click **Next**.

Select a Template Type

1. Select a template type:
   - Select **Blank RFID Label** if you wish to design your label from scratch.
   - Select **RFID Compliance Template Label** if you wish to pattern your label after an existing template.
2. Click **Next** after selecting the template type.

Select an RFID Target Device

1. Select a Target Device for your label. For RFID Smart Labels, this is an RFID printer that will print the label that you design.

Note: The Manufacturer list is limited to Loftware-supported RFID printer families. Selecting a Manufacturer further limits the list of RFID printers to Models belonging to the selected printer family.

2. Select an RFID printer Manufacturer and Model. Click **Next**.

Set Field and Media Options

Create a Blank RFID Label

1. In the Field List Selection section, the default **None** is the only selection available unless there is an LLMFIELD [.lst] file in the main Loftware folder. LST files provide a means of constraining the field names on a label to a pre-defined list. If LST files are available, these are listed in the drop-down list.
2. Select Tag Type – This lists the tag types supported by the target printer you selected in step 5. In order to encode data on RFID smart labels, RFID printers must support specific RFID commands. Some RFID printers support encoding to specific UHF tag types. Others will write only to specific HF tags. A few support specific UHF and HF tags. Refer to the RFID Devices and Tag Types section of the Printers and Labels section for a list of Loftware RFID devices and the tag types each supports. Note that you can change the tag type after the label is created from the RFID field's property sheet.
3. Select Tag Display –These are the tangible tags that will be programmed to store the data and then attached to items.

Note: You can change the tag display after the label is created from the RFID field's property sheet.

4. Enter the height and width of the label stock for the target printer. As you change the dimensions of the label, they are reflected in the Preview section.
5. Set the orientation for this label. The default is 0º. Click **Next**. Information on print orientation is found in the *On-Screen Label Presentation* section.

Select an RFID Compliance Template

1. Select the compliance template you want to use from the list. When a selection is made, a preview and a description of the template are displayed.
2. Click **Next**.

Note: Compliance templates provide a quick starting point for designing a label. Loftware includes a number of pre-built templates that you can use as is or as a starting point for your new label. You can customize your own template and add it to the template selections.

New Media Wizard Summary

- A summary of your selected settings is displayed. Click **Finish** to finalize.

An RFID antenna icon is automatically dropped on the label. If you selected to use a compliance template, there may be other fields on the label.

The antenna icon is merely a placeholder for the RFID field. This allows you to view its approximate location on the label, making it easier to design other fields around it. Check its location on the label as you may need to move it up or down, depending on your particular label stock. You may also change the Tag Display property to better reflect the physical characteristics of your label stock.

You can now set properties and define the data source for the RFID field. You can also add other fields on the label.

Note: If you have not configured the target printer for this label, when you specify label settings in Media Setup (F5), a warning is displayed.

Converting a Barcode Label to an RFID Smart Label

Converting an existing barcode label to a RFID Smart Label can be a simple process.

The example below shows a label with the normal address fields and a barcode that has a GS1 (UCC) assigned Company Prefix and an Item Reference Code. The combination of the Company Prefix and Item Reference Code forms the basis for GTIN (Global Trade Identification Number) product identification. GTIN, together with the Serial Number, is used in the SGTIN (Serialized GTIN) specification. You will need serial number information to convert the barcode label to an RFID smart label using SGTIN encoding.

1. Use File | Open to bring up the label in Design mode. It may look similar to the following figure:

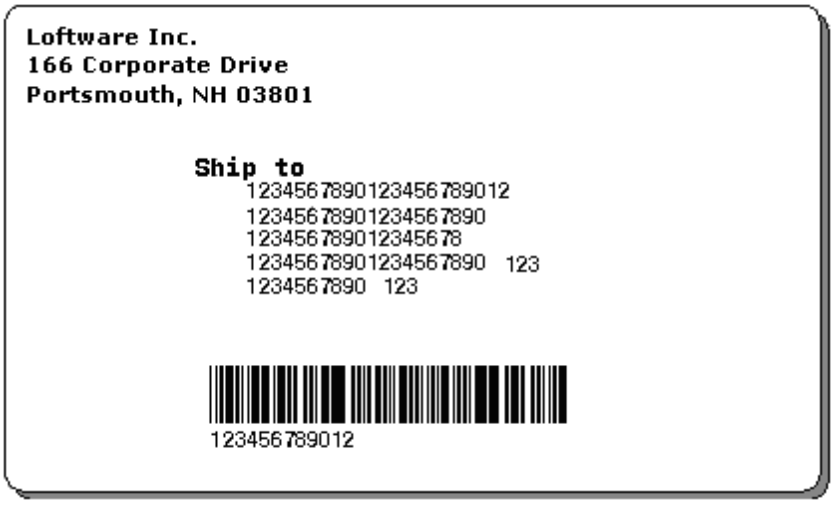

Figure 5.2: An example barcode label

2. Before you can add an RFID field to the label, you must specify the target RFID printer. Right click the label and select Media Setup from the popup menu (or press **F5**).
3. Select a target printer Manufacturer and an RFID printer Model from the Label Setup dialog. Click **OK**.
4. If the selected printer has not been configured, you will be alerted and given the choice of doing so or of configuring it at a later time. A warning message may also tell you of changes to the label needed for the selected target printer.
5. Add the RFID field by selecting the antenna tool button and then click its location on the label.

This places an antenna icon on the label.

6. To configure the RFID field, refer to the SGTIN section Example 3 for the next steps.

Data Sources for Label Text Fields

Any field available on the toolbox, except another RFID field, can be added to an RFID smart label. In addition, you can utilize data sources other than the Keyboard to obtain values for the text fields.

The following examples demonstrate deriving data values from sources other than the keyboard.

Automatic Incrementing Example

In this example, a label includes a barcode field that contains the Item Reference value. The Serial Number value is set to automatically increment for each label that you print from a starting value that you specify.

1. Load or design the label.
2. Using the tool, add **ItemReference** and **SerialNumber** variable text fields.
3. Add a barcode field to the label, and name it **ProductCode**.
4. Set the following **ItemReference – Formula** fields.
   a. Set the **Data Source** to Formula.
   b. Select the **Mid-String** operation in the **Formula** data source.
   c. Select the field name of the barcode field (ProductCode).
   d. Set the 2nd value of the **Mid-String Operation** to 7.
   e. Set the 3rd value of the **Mid-String Operation** to 5.

Note: This field automatically gets the 5 digit ItemReference field starting at position 7 in the ProductCode barcode field. If the ProductCode value is 09401234567894, the extracted ItemReference value would be 34567.

5. Set the following **SerialNumber – Serial Number**.
   a. Set its **Data Source** to SerialNumber.
   b. From the **Data Source** dialog, click **Edit**.
   c. Set the attributes to
      - Numeric Only
      - Increment by 1
      - Length of 8
      - Starting value of 10029343.

Note: This value automatically increments the 8-digit Serial Number, starting at 10029343 for every label you produce.

Database Linked Example

In this example, values for the **ItemReference** and **SerialNumber** fields on the label are obtained from a database.

1. Create and populate a database that include fields for the 5-digit **ItemReference** and 8-digit **SerialNumber**. Set the **ItemReference** field as the primary key field. This will serve as the look-up field for the database.
2. Set an ODBC connection to the database.
3. Using the label you just created above or a similar label with the same fields, select the **ItemReference** field. Click the Data Source browse button (...) to access the **Data Source** dialog. Change its data source to **Database-Key**.
   a. Select the ODBC Data Source name of the database you just set up in steps 1 & 2. Select the table containing the values, if there is more than one table in the database.
   b. From **Field**, select the **ItemReference** field.
   c. Click **OK**.
4. Follow the same steps to set up the data source for the **SerialNumber** field, but set its data source to Database-Data.

These are just a few ways you can obtain values for fields on your RFID Smart Label.

Related Information
Refer to the Data Sources section for more information.
For information on how to connect to your database using ODBC, refer to the *ODBC* section if needed.

RFID Field Properties

Property	Description	Values
Data Source	For RFID fields, the choices are limited to Keyboard and Block Configuration. Refer to Data Sources for RFID Fields in this section for more information.	Block Configuration Keyboard
Field Name	The name of the field. Names must start with a letter. Other characters can be numbers, letters, periods, or underlines. It is important to give your fields meaningful names. **For Example** Gross_Weight Total_pieces	Field Name Conditions

Property	Description	Values
Input Prompt	The prompt that will appear on the operator data entry screen. **For Example** Part Number Item Description	Text
Max # Chars	Maximum number of characters that will be printed for this field. If this field is filled in at print time, this is the maximum number of characters that the operator will be able to enter in the data entry screen. **Note:** Max # Chars is only available for Keyboard data sources.	Number
Pos: Left	Distance from the left edge of the label to the left edge of this field.	
Pos: Top	Distance from the top edge of the label to the top edge of this field.	
Tag Display	These are the tangible tags that will be written on to store the data and then attached to items. The tag design choices are listed in the Setting up topic of this section.	
Human Readable	Human readable fields are an interpretation of the encoded RFID data using fonts that can be read by a human operator. For an RFID Smart Label with a UHF tag, when the target RFID printer supports it, the Free floating and Read Tag settings can be selected and shown on the tag. When Read Tag is selected and the target RFID printer supports it, the printer reads the tag after encoding and shows the data that is on the tag in a human readable field. Free floating is the data sent to a tag.	Free Floating None Read Tag

Property	Description	Values
Tag Type	These are the HF/UHF tag protocols supported by the target RFID device. Refer to the section on RFID Devices and Tag Types in the Printers and Labels section.	UHF 64-bit Class 1, UHF 96-bit Class 1, UHF 96-bit Class 0+, UHF UCODE EPC 1.19, and UHF ISO 18000-6B tag types. Smart labels can also be created using Impinj UHF Gen 2 (Monza) and TI UHF Gen 2 (Dallas) tag types. HF tag types include Philips HF I-Code, Philips HF I-Code ISO 15693, TI HF Tag-it, and TI HF Tag-it ISO 15693. **Note:** Tag types available depend on whether these are supported by the target RFID device.

Setting RFID Field Properties

1. Select Insert | RFID Field
2. Set the properties, and click **OK**.

Data Sources for RFID Fields

Keyboard

The Keyboard data source is the default for RFID fields. The Keyboard data source now accepts data in ASCII or hexadecimal format.

Note: Any field available on the toolbox, except another RFID field, can be added to an RFID smart label. In addition, you can utilize data sources other than the Keyboard to obtain values for the text fields.

To define Keyboard Data Source settings

- Double-click the RFID antenna icon on the label. Alternatively, right click the selected antenna icon and select **Edit Data Source** from the popup menu.

Block Configuration

From the Block Configuration dialog, data source and the data that will be encoded can be specified for each block.

Tag Type

This lists the HF/UHF tag protocols supported by the target RFID device.

Block

This shows the block type or block number. The number and type of blocks available depend on the selected Tag Type, as shown in the table below.

UHF Gen 1					UHF Class 1 Gen 2	HF Tags
	Class 1	Class 0+	UCODE EPC 1.19	ISO 18000-6B		
PC	√					
KC		√				
AP					√	
KP					√	
EPC	√	√			√	
USR		√			√	
# X to n			Block # 0	Block # 0		# X to n

Tag Type	Description
PC	Used for a 64-bit and 96-bit Class 1 Gen 1 tags, this is the Pass Code, a 1-byte value used to deactivate the tag and render it unresponsive to reader commands. The Pass Code is required to lock the EPC block and/or to enable Lock Tag After Writing. The Lock setting of the PC block is disabled.
KC	Used for a Class 0+ tag, this is the Kill Code, a 3-byte value that deactivates the tag.
AP	Used for a Class 1 Gen 2 tag, this is the Access Password, a 4-byte value that allows access commands to be executed, including writing to locked blocks, and sets the tag in secure state. To lock the EPC or the KP block of a Class 1 Gen 2 tag, AP must first be set.
KP	For a Class 1 Gen 2 tag, this is the Kill Password, a 4-byte value that will be used to deactivate the tag.
EPC	Used to select an EPC or DOD encoding from the Data Source column.
USR	For a Class 0+ tag, this block can be used for 13 bytes of user data. For a C1G2 tag, this block can be used for 32 bytes of user data.
	For the HF tag type, this column lists the configurable block number (from X to n).

Data Source

Setting	Description
Unused	No data will be sent to this block.
Fixed	When selected, data for this block can be directly entered in the Data column.
Field	When selected, an existing field on the label can be chosen from a drop down list in the Data column. The list is limited to variable text and barcode fields for labels. For tags, this is limited to variable text fields.

Setting	Description
New Field	When selected, a field name can be entered in the Data column that does not yet exist on the label but will be specified later.
EPC	Available for the EPC block; when selected, you can launch the EPC Configuration dialog from the Data column. Refer to the EPC Encoding Types section for information. Once the EPC portion has been configured, the Data column for this row will show the EPC Encoding Type.
DoD	When selected, you can launch the DOD Configuration dialog from the Data column.
URI	When selected, you can launch the URI Configuration dialog from the Data column. **Note:** There can be only one block with an EPC, DoD, or URI data source for a label. Once you have a block configured using URI of any of the EPC or DoD encoding types, other blocks that you wish to configure must use any of the other data sources (Unused, Fixed, New Field, or Field).
Input Type	The format of the data input. Selections include ASCII, Decimal, and Hexadecimal. Depending on the requirements of the device and the selected option, conversions may be applied to the data being passed to the device.
Padding	When data for a block is smaller than the data allocated for the block, the Bytes value is shown in red. You must select whether the padding should be added to the Left or to the Right of the data. None, for no padding, is the default.
Pad Char	When Left or Right padding is selected for a block that requires data padding, the character that will be used for padding can be selected – Zero or Space.
Bytes	This is the size in bytes of the data for this block. This is filled in once the block has been configured and depends on the selected Data Source and the Data being sent to the device. If this is shown in red, the data value is either too small or too big for the block.
Block Size	The maximum size (in bytes) of the block. If data defined for the block is too small or too large for the block, a warning message is displayed. See Padding and Overflow settings.

Lock and Lock Tag After Writing

- UHF 64-bit / UHF 96-bit Class 1 Gen 1- For these tags, you must first specify a PC to lock the EPC block or to enable the Lock Tag After Writing setting. The Lock check box of the PC block is disabled.
- UHF 96-bit Class 0+ - EPC / USR blocks can be locked and Lock Tag After Writing can be enabled, passcode is not required (no passcode field).

For the above tags (UHF 64-bit, UHF 96-bit Class 1 Gen 1, UHF 96-bit Class 0+), the Lock box is an L (on) or OFF setting. When Lock Tag After Writing is enabled for these tags, the Lock state of the EPC or the USR block cannot be changed without first turning Lock Tag After Writing off.

- UHF ISO 18000-6B, UHF UCODE EPC 1.19 – Each has only one block and its Lock box is disabled. However, Lock Tag After Writing can be set.
- HF - Lock can be set for each block. Lock Tag After Writing can be set.
- UHF Class 1 Gen 2 - To set the Lock setting to anything other than Off for the KP or the EPC block, the Access Password (AP) must be set. The available Lock options depend on the target device:

- U – Unlock: The tag is writeable in any state.
- L – Lock, prevents the block data from being changed, in any state (open or secure).
- UP – Unlock Permanently: The tag is writeable in any state; the Unlocked status of the block cannot be changed.
- P – Protect: A tag that is "protected" can be written to if the tag is in the secure state (with Access Password).

Overflow

If data defined for a block exceeds the size assigned to the block, this allocates additional space from the next undefined adjacent blocks. For example, if block #5 requires 12 bytes for its data but it only has 4 bytes allocated to it, if Overflow is enabled and the next adjacent blocks (blocks 6 and 7) are unused, the allocated bytes for these blocks will be assigned to accommodate the data in block #5. The rows used for the overflow are shaded and cannot be configured. Note that only HF tags support Overflow allocation.

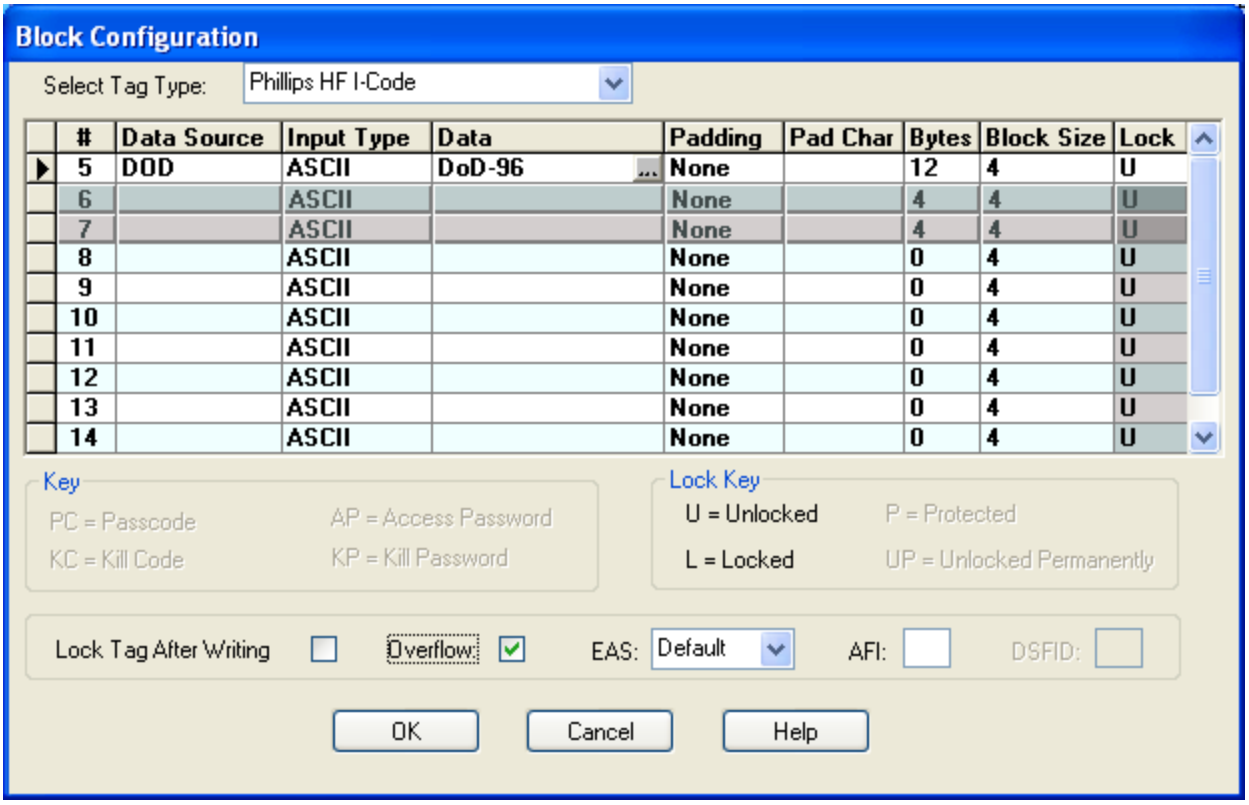

Figure 5.3: Using HF Tag Overflow allocation

AFI and DSFID

Some HF tag types that are defined by the ISO 15693 standard support having an assigned Application Family Identifier (AFI) number and a Data Storage Format Identifier (DSFID). These provide additional information. DSFID indicates how the data is structured in the tag memory. AFI is used to group select tags. When the AFI or the DSFID entry field is enabled, you can enter the tag ID number for the field.

EAS

Electronic article surveillance, an item-tagging system that, when turned on, sounds an alert when an item that the EAS tag is attached to leaves an area. This is currently supported by the Philips HF tag types.

Related Information
Refer to the *Printers and Labels* section's sections on Tag Configuration and RFID Devices and Tag Types.

EPC Configuration

Note: There can be only one block with an EPC, DoD, or URI data source for a label. Once you have a block configured using any of the EPC, DoD, or URI encoding types, other blocks that you wish to configure will be limited to the other data sources (Unused, Fixed, New Field, or Field).

The options available on the EPC Configuration grid depend on the EPC Encoding Type selected.

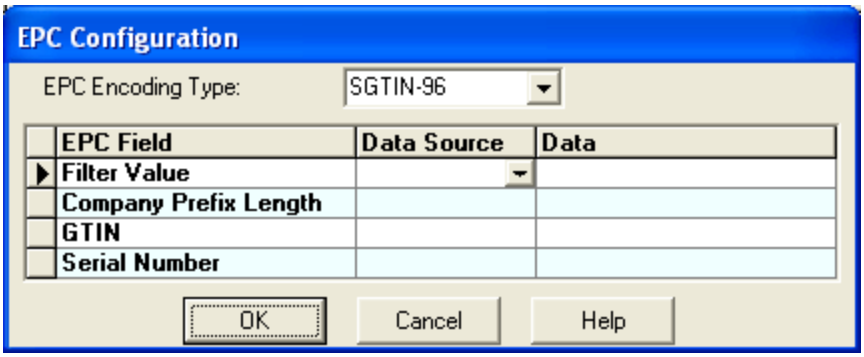

Figure 5.4: EPC Configuration Grid

Field	Description
EPC Encoding Type	This lists the available EPC encoding schemes that can be used to create an EPC label. Currently, the choices are: GIAI-64 GIAI-96, GIAI-96 ALT, GID-96, GRAI-64, GRAI-96, GRAI-96 ALT, SGLN-64, SGLN-96, SGLN-96 ALT, SGTIN-64, SGTIN-96, SGTIN-96 ALT, SSCC-64, SSCC-96, and SSCC-96 ALT. Refer to the EPC Encoding Types section for more information.
EPC Field	This lists EPC fields based on the selected EPC Encoding Type. These fields are described in the specific sections on the EPC Encoding Type.

Data Source / Data

Data Source	Description
Fixed	When **Fixed** is selected, data for this EPC field can be directly entered in the **Data** column.
Field	When **Field** is selected, an existing field on the label can be chosen from a drop down list in the **Data** column. For labels, the list of fields is limited to variable text and barcode fields. For tags, only variable text can be used.
Choice	When **Choice** is selected, a drop down list in the Data column restricts values for this EPC field to a predefined list.

Data Source	Description
New Field	When **New Field** is selected, a field name can be entered in the **Data** column that does not yet exist on the label but will be specified later.

Click **OK** when all EPC fields have been defined. A warning is displayed if there are missing entries in any EPC field.

DoD Configuration

Note: There can be only one block with an EPC, DoD, or URI data source for a label. Once you have a block configured using any of the EPC, DoD, or URI encoding types, other blocks that you wish to configure will be limited to the other data sources (Unused, Fixed, New Field, or Field).

The options available on the DoD Configuration grid are similar for both 64-bit and 96-bit DoD Encoding Types. They differ in data size allowed.

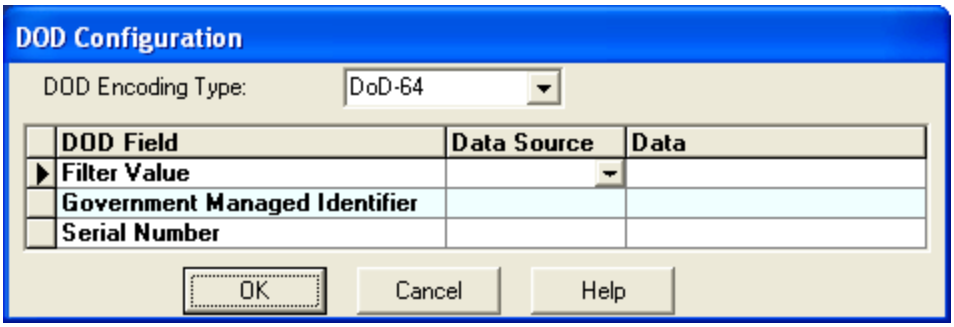

Figure 5.5: DOD Configuration Grid

The following table describes the DoD fields available from the DoD Configuration dialog.

DoD Field	Description
Filter Value	This specifies packaging level and identifies a pallet, case, or item (0, 1, 2).
Government Managed Identifier	This field uses a unique Commercial and Government Entity (CAGE) alphanumeric code assigned to a supplier by the DoD. See the next section, DoD Encoding Type, for more information.
Serial Number	This is a number assigned by the supplier (the holder of the CAGE code) to uniquely identify the item.

Table 5-9: DoD Fields for DoD Encoding

Data Source / Data

Data Source	Description
Fixed	When **Fixed** is selected, data for this EPC field can be directly entered in the **Data** column.

Data Source	Description
Field	When **Field** is selected, an existing field on the label can be chosen from a drop down list in the **Data** column. For labels, the list of fields is limited to variable text and bar code fields. For tags, only variable text can be used.
Choice	When **Choice** is selected, a drop down list in the Data column restricts values for this DOD field to a predefined list.
New Field	When **New Field** is selected, a field name can be entered in the **Data** column that does not yet exist on the label but will be specified later.

URI Configuration

Note: There can be only one block with an EPC, DoD, or URI data source for a label. Once you have a block configured using EPC, DoD, or URI encoding, other blocks that you wish to configure will be limited to the other data sources (Unused, Fixed, New Field, or Field).

A Uniform Resource Identifier (URI) is a character string representation that is used to identity a resource. A Uniform Reference Name (URN) is a URI that identifies a resource by name within a namespace. Loftware uses the urn:epc namespace. The resource name includes the data type, the encoding type, followed by the encoding fields:

```
urn:epc:type:EncName:EncodingFields
```

where type is the data type, EncName is the encoding type used, and EncodingFields are the data fields required by the encoding type, separated by dot marks.

```
urn:epc:tag:gid-96:6289.11800.4058
```

In this example, the GID-96 encoding fields part of the URI are entered in the format GeneralManagerNumber.ObjectClass.SerialNumber

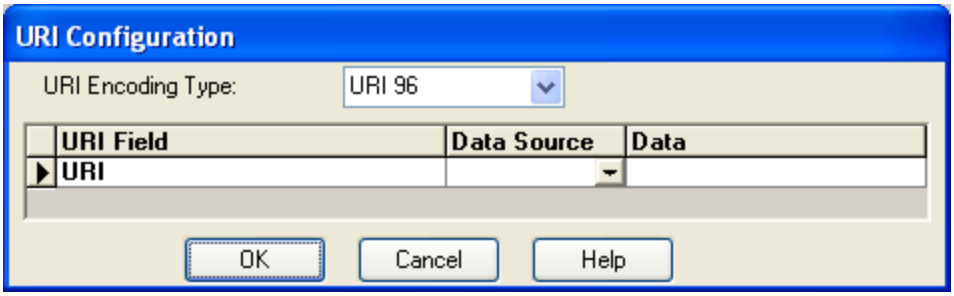

Figure 5.6: URI Configuration Grid

The following example illustrates URI data representation.

GID-96 Example	
General Manager Number	6289
Object Class	11800
SerialNumber	4058

Hex Result	350001891002E18000000FDA
URI	urn:epc:tag:gid-96:6289.11800.4058
URI is in the form: urn:epc:tag:gid-96:GeneralManagerNumber.ObjectClass.SerialNumber	

One way to determine the URI representation of your data and how it is formatted for use with Loftware is through the Loftware RFID Calculator.

1. Select Options | RFID Calculator.
   a. On the **Encode** section of the RFID Calculator, select the desired encoding type.
   b. Enter the values needed for the encoding type.
   c. Click **Encode**.
2. Drag the mouse over the Encoded Result to select it, right click, and select **Copy**.
3. Paste the copied Encoded Result in the **HEX Value** field at the top of the dialog.
4. Click **Decode**.
5. To use this value in the URI Configuration, copy the Decoded URI value and paste it as Fixed data in the **URI Configuration** dialog.

DoD Encoding Type

DoD tag construct has been added to the Loftware RFID Solution as an option for DoD suppliers who are not members of and do not intend to join EPCglobal. DoD encoding guidelines are specified in DoD Suppliers' Passive RFID Information Guide Version. This link current as of 11/23/2009.

To encode a DoD tag, the following fields are placed in the proper order within the 64 bits or 96 bits of the tag:

- DoD header value – This specifies whether the data is encoded as a DOD-64 or a DOD-96 tag construct.
- Filter value – This identifies a pallet, a case, or a UID item. The values are the same for DOD-64 and DOD-96.
- CAGE Code – This is a unique Commercial and Government Entity (CAGE) code assigned to the supplier by the DoD. To encode the alphanumeric 5-character CAGE code, a simple algorithm is used. For DoD-64 constructs, it is compressed by truncating the two most significant bits of the 8-bit ASCII representation of the characters. For DoD-96, an ASCII space char is prepended to the CAGE code. The mapped values are listed in the DOD document referenced above. The result is the Government Managed Identifier value.
- Serial Number – This uniquely identifies the tagged item.

The 64-bit or 96-bit binary (base 2) number is then converted into hexadecimal (base 16) format for encoding. The result is a unique number that can be written to the tag.

The table below shows the hex result of the two examples given in the DoD Guide referenced above. We can use the values in the DoD encoding examples that follow.

Encoding Type	CAGE	Filter Value	Serial #	Hex Result
DoD-64	1D381	1	16522293	CE71133E31FC1C35
DoD-96	2S194	0	12345678901	2F02032533139342DFDC1C35

Table 5-10: DoD encoding results using sample values

Example 1 - DoD-96

In this example, a supplier with an assigned CAGE code is encoding a 96-bit tag on a case of goods. Note that the steps to create a DoD-64 tag are very similar. The DoD fields are the same but differ in the data size. Note, however, that DoD-64 encoding cannot be used with Class 1 Generation 2 tag types, which require a 96-bit EPC identifier.

1. Create an RFID Smart Label.
2. Using the tool, add 2 variable text fields to the label:
   - A field called **Company_GID** that contains the company CAGE code
   - A serial number field called **SerialNum**
3. Double click the RFID antenna icon. (Alternatively, select and then right click the RFID antenna icon. From the popup menu, select **Edit Data Source**.)
4. From the Data Source dialog, select **Block Configuration** and then click **Configure** to launch the Block Configuration dialog.
5. Select **UHF 96-bit Class 1** from the **Select Tag Type** list.
6. In the **EPC** block, select **DOD** from the **Data Source** column. Click in the Data cell and then click the browse button (...).
7. From the **DOD Configuration** dialog, set the **DOD Encoding Type** property to **DoD-96**. Refer to the DoD Configuration section for a description of DoD fields on this dialog.
8. Set the **Filter Value**. Select the **Choice Data Source**, and select **0** from the **Data** drop-down list. This denotes case packaging level.
9. For the **Government Managed Identifier**:
   - Set its **Data Source** to **Field** and then select **Company_GID** from the **Data** drop-down list.

10. For the **Serial Number**:
    - Set its **Data Source** to **Field** and then select **SerialNum** from the **Data** drop-down list.
11. Click **OK**. Then, click **OK** to exit Block Configuration.

Note: The Data Source dialog shows a summary of the configured block.

12. Click **OK** to exit the **Data Source** dialog.

Creating a tag or label using DoD-64 encoding is very similar to the example above. It uses the same DoD fields for encoding the data. The difference is the size of the data that can be written to the block.

Note: For all examples in this section, you can use the Loftware RFID Calculator application to help you verify the encoded data.

EPC Encoding Types

This section describes the EPC encoding schemes used in Loftware and the fields required to program EPC data. Examples are included to quickly demonstrate their use.

All EPC encodings are designed to produce a unique number. In addition to a header, EPC encodings include one or more value fields that contain a unique EPC identifier and an optional Filter value. The EPC encoding type you use may depend on a number of things, including specified requirements, the type of data you include or have available to identify objects or classes.

Note: All 96-bit examples included in this section can be used for Class 1 Generation 2 (C1G2) tag types. Because C1G2 tags require a 96-bit EPC identifier, 64-bit encodings cannot be used with C1G2 tags.

To apply the 96-bit encoding examples to Class 1 Generation 2 tags, verify that the label is configured for a device that supports C1G2 tag types.

Related Information
For tag types that each Loftware RFID device supports, refer to the *Printers and Labels* section of this guide.

General Identifier (GID-96)

The General Identifier (GID-96) encoding type is a general identity type defined for a 96-bit EPC. In addition to the header, it is composed of the following fields:

GID-96 EPC Field	Description
General Manager Number	This is a unique number assigned by EPCglobal to identify an entity – a company, a manager, or an organization. This General Manager entity is responsible for maintaining the numbers in the Object Class and Serial Number fields.
Object Class	This number, which must be unique within each General Manager Number domain, identifies a class or "type" of thing.

GID-96 EPC Field	Description
Serial Number	This number must be unique within each Object Class.

GID-96 is encoded by concatenating the following fields, from most significant to least significant: Header, General Manager Number, Object Class, and Serial Number.

Example 2 - 96-bit GID

Once you have your General Manager Number assigned to you by the EPC, you can use the 96-bit GID to encode your RFID Smart Label by supplying unique numbers for each class within your domain (Object Class) and unique Serial Numbers for items within the Object Class.

Note: All 96-bit examples included in this section can be applied to Class 1 Generation 2 tag types. Because Generation 2 tags require a 96-bit EPC identifier, 64-bit encoding cannot be used with them.

In this example, the General Manager Number and the Object Class fields have fixed values. The Serial Number obtains its value from a Serial Number data source, for an RFID smart label.

1. Load (or design) the RFID smart label. Refer to *Creating RFID Smart Labels*, if needed.
2. Using the tool, add a variable text field for the Serial Number field.
3. Specify the data source for the Serial Number:
   a. Double click the **Serial-Number** field to access the **Data Source** dialog.
   b. Select **Serial-Number** data source, and click **Edit**.
   c. Leave the defaults unchanged for **Increment**, **Numeric Only**, and **By Value=1**. Change the **Length** to 4, and type a **Start Value** of 4058.
   d. Click OK to each of the dialogs to return to the label design form.
4. Double click the RFID antenna icon. Alternatively, select and then right click the RFID antenna icon. From the popup menu, select Edit Data Source.
5. From the **Data Source** dialog, select **Block Configuration** and then click **Configure**. This launches the **Block Configuration** dialog.
6. For the **EPC** block, select **EPC** from the **Data Source** column. Leave the **Tag Type** at UHF 96-bit Class 1.
7. Click in the Data cell to reveal the browse button (...). Click the browse button (...) to access the EPC Configuration dialog.
8. Set the **EPC Encoding Type** property to GID-96. Refer to the General Identifier (GID-96) section for a description of EPC fields on this dialog.

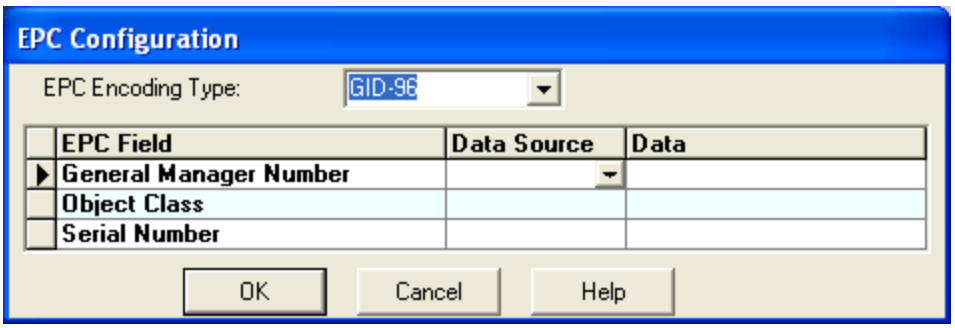

Figure 5.7: Setting values for selected EPC Encoding Type

9. On the grid, set the Data Source for General Manager Number to Fixed. Type your EPCglobal-assigned company or organization number in its Data cell. If you are simply following along, enter 6289.
10. Select a Fixed data source for the Object Class field, and enter 11800 in its Data box.
11. Set the Data Source for Serial Number to Field, and select its field name from its Data drop-down list. This is the field created in step 2. If you are simply following along, select a Fixed Data Source, and enter 4058 in its Data box.
12. Click **OK** on the EPC Configuration and the Block Configuration dialogs.

Note: The Data Source dialog now shows a summary of the configured block.

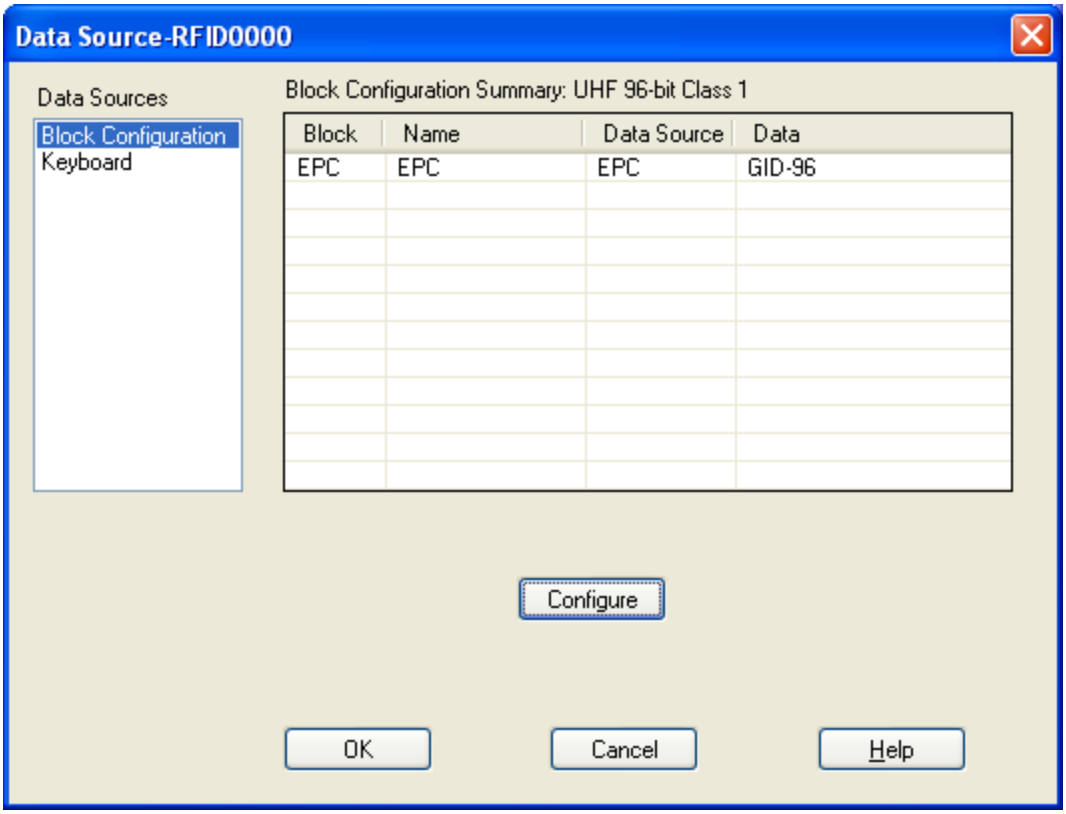

Figure 5.8: Block Configuration Summary

13. Click **OK** to return to the label design area.

The sample data and the encoded result are shown in the following table.

Sample	Encoded Result
Encoding Type	GID-96
General Manager Number	6289
Object Class	11800
Serial Number	4058
Result	350001891002E18000000FDA

Related Information
For all examples given in this section, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this section.
You can add other fields to the label, as described in the *Designing the New Label* section of this guide.

Global Trade Identification Number (GTIN)

GTINs have traditionally been used to identify products with GS1 barcodes. Because GTINs can be encoded in GS1 symbols, their use is far-reaching and understood globally. In general, a GTIN consists of:

- A Company Prefix assigned by GS1 to a managing entity (a company or an organization)
- An Item Reference assigned by the managing entity to a an object class

The combination of the Company Prefix and the Item Reference is preceded by an Indicator Digit and followed by a Check Digit. These data elements are used as the basis for the SGTIN specification.

GTIN is normally stored as 14 digit numbers and can be derived from data that you probably already have by left padding it with 0s as shown in the following table.

Barcode Symbology	GTIN Structure	GTIN
	UPC-12 (UPC-A)	00614141000449
	EAN-13	0940123456789 4

- The leftmost digit is the Indicator Digit, which can be changed (by you, the supplier) to denote various packaging levels.

- The rightmost digit is the Check Digit, which you may already have or you may have relied on the label printer to calculate. This check digit is dropped during the EPC encoding.
- The middle 12 digits consist of your GS1 assigned Company Prefix and the Item Reference Code. The breakpoint between the two varies with the length of your assigned prefix.

Serialized Global Trade Identification Number (SGTIN)

SGTIN is a method of identifying unique items at the unit or retail level as well as at the case and carton levels. As described in the preceding GTIN section, GTIN is composed of a GS1 assigned Company Prefix and an Item Reference. The Serial Number, while not part of the GTIN, is part of SGTIN and assigned to an individual object by the managing entity. The Serialized GTIN (SGTIN) is GTIN combined with a unique serial number.

Where GS1 barcodes have traditionally been used, the SGTIN specification can be used beyond the Item Reference right down to the exact serial number of the item.

If you are already printing GS1 barcodes, most likely you already have the basis for forming a GTIN, especially if you are involved in the Sunrise 2005 Initiative. In addition to the GTINs, you, as the managing entity, will need to assign serial numbers to individual objects. With this information, Loftware's flexible architecture allows you to create an RFID SGTIN code with relative ease.

There are 3 ways to set an RFID label to create an SGTIN code. Each of these methods is sufficiently different to warrant describing them separately.

- Calculate SGTIN from existing GTIN and Serial Number data. This scenario for 96 bit labels is demonstrated in Example 3.
- Calculate SGTIN from existing Company Prefix, Item Reference, and Serial Data. This technique can be used for both 96 and 64 bit tags and is demonstrated in Example 4.
- Send literal SGTIN data (in hexadecimal format) directly to the field (96 or 64 bit). This is demonstrated in Examples 8 and 9.

SGTIN-96 EPC Field	Description
Filter Value	Not part of the GTIN, as such. Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix Length	Length of the GS1 Company Prefix. The lengths of the GS1 Company Prefixes assigned to companies vary.
GTIN	GTIN is composed of a GS1 assigned Company Prefix and an Item Reference. Refer to the previous section, Global Trade Identification Number (GTIN) for more information.
Serial Number	A unique number assigned to an individual object by the managing entity (the holder of the Company Prefix).

SGTIN-96 ALT EPC Field	Description
Filter Value	Not part of the GTIN, as such. Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix	Assigned by GS1 to a managing entity (a company or an organization)
Item Reference	A number assigned by a managing entity to an object class
Serial Number	A unique number assigned to an individual object by the managing entity (the holder of the Company Prefix).
Indicator Digit	A single digit number that can be used to increase the numbering capacity to identify the packaging level of a product, as in the GS1-14.

SGTIN-64 EPC Field	Description
Filter Value	Not part of the GTIN, as such. Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix Index	An index into a table that provides the Company Prefix as well as an indication of the Company Prefix's length. An index is assigned to companies that need to use the 64 bit tags, in addition to their existing GS1 Company Prefixes. For information on Company Prefix Index and the Object Naming Service, refer to the EPCglobal's web site.
Item Reference	Number assigned by the managing entity (the holder of the Company Prefix) to a an object class
Serial Number	A unique number assigned to an individual object by the managing entity.

Example 3 - 96 Bit SGTIN

In addition to a header, SGTIN-96 is composed of the Filter Value, Company Prefix Length, GTIN (Company Prefix combined with an Item Reference), and Serial Number.

In the example below, the GTIN data is already specified in a UCC barcode. You combine it with the Serial Number data to obtain the SGTIN.

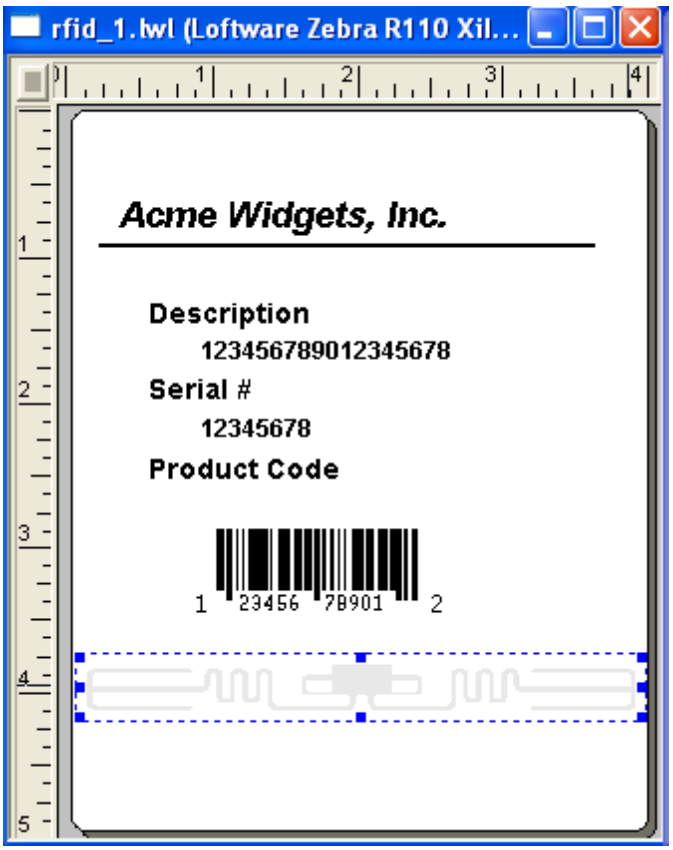

Figure 5.9: A Typical UPC Label with an RFID Field

1. Load (or design) the RFID Smart Label.
   a. For this example, add variable text fields that contain values for the Company Prefix, Item Reference, and Serial Number.
   b. For this example, set the length of the Company Prefix value to 6 digits. Set the data sources for each to Keyboard.
   c. Add a barcode field to the label. The barcode, which for this example we will call Barc001, will contain the GTIN. Set its Data Source to Formula that uses the Combine (&) operation to concatenate the Company Prefix and the Item Reference.
2. Double click the RFID antenna icon. (Alternatively, select and then right click the RFID antenna icon. From the popup menu, select Edit Data Source.)
3. From the Data Source dialog, select Block Configuration, and then click the Configure button to launch the Block Configuration dialog.
4. Select the UHF 96-bit Class 1 tag type.
5. In the EPC block, select EPC from the **Data Source** column.

6. Click in the Data cell to reveal a browse button (...). Click the browse button (...) to access the **EPC Configuration** dialog.
7. Set the **EPC Encoding Type** to SGTIN-96.
8. Set the Filter Value to denote packaging level. In this example, select the Choice Data Source, and select 3 from the Data drop-down list.
9. The Company Prefix Length depends on the length of your UCC-assigned Company Prefix. For purposes of this example, select Choice for its Data Source, and type in 6 in the **Data** column.
10. Set the GTIN Data Source to Field, and select the Barc001 barcode field on the label or the GTIN_1 field on the tag from the **Data** column.
11. Set the **Serial Number Data Source** to **Field**, and select the serial number field.

The configured grid for the example label may look like the following.

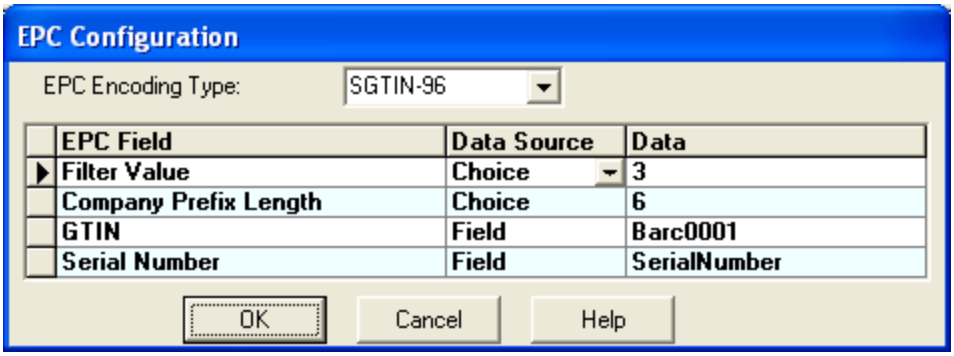

Figure 5.10: Example EPC SGTIN-96 Configuration

12. Click **OK** to each of the dialogs to return to the label design area. Note that the **Data Source** dialog now shows a summary of the configured block.

You have just set up your RFID Smart Label to obtain its GTIN and Serial Number from existing fields on the label. They could also derive their data from other data sources like a database.

- Instead of supplying the Serial Number, its data source could be set to Serial-Number where the starting number can be pulled from a file.
- The barcode in this example could be UPC-A, EAN-8, EAN-13, ITF-14, Code 128, or GS1 DataBar Omnidirectional.
- The data for this example could be supplied using On-Demand Print. It could just as well come from an LPS .pas file, .xml, .csv, ActiveX Control, .Net Control, WebX Control, or Socket Integration.
- The Serial and Barcode fields could be made as invisible data placeholders by setting their Printing Field property to **No** or by placing the data placeholders in the On-Demand Print Form rather than on the label itself.

- Your label will be different from the one previously shown. You need to apply these concepts to your own situation.
- This example can be extended to use the SGTIN-96 ALT encoding.

Related Information
For all examples given in this section, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this guide.
Refer to the Serialized Global Trade Identification Number (SGTIN) section for explanation of the EPC fields on this dialog.

Example 4 - 64 Bit SGTIN

This is an example of 64 bit tags calculated from Company Prefix Index, Item Reference, and Serial Number. Because of the limited data size, GTIN cannot be embedded in 64-bit SGTIN. Instead, a Company Prefix Index is supplied.

Note: This example cannot be used with Class 1 Generation 2 (C1G2) tag types. Generation 2 tags require a 96-bit EPC identifier. Use 96-bit encoding examples with C1G2 tags.

In this example, you must supply a Company Prefix Index. This is assigned to you by GS1 as described in the specifications. This prefix is static and does not change. The Item Reference and Serial Number fields are set to obtain their data from fields that are on the label. Sample data is included if you wish to just follow along with the example.

Rather than creating placeholders for data, you may simply send the appropriate data to the fields using the Keyboard data source. You can also enter the values directly into the Data column after selecting a Fixed data source from the EPC Configuration dialog, and this is also demonstrated in this example.

1. Load (or design) the RFID Smart Label.
2. Add variable text fields that contain values for the Item Reference and Serial Number. Set the data sources for each to Keyboard. You can add any of the fields on the toolbox (except another RFID field). In addition, variable text fields can obtain data from all available data sources.
3. Double click the RFID antenna icon. Alternatively, select and then right-click the RFID antenna icon. From the popup menu, select **Edit Data Source**.
4. From the **Data Source** dialog, select **Block Configuration**, and then click **Configure** to launch the **Block Configuration** dialog.
5. Select the UHF 64-bit Class 1 tag type.
6. For the EPC block, select EPC from the **Data Source** column.
7. Click in the Data cell to reveal the browse button (...). Click the browse button (...) to access the EPC Configuration dialog.
8. Set the **EPC Encoding Type** property to **SGTIN-64**.
9. Set the Filter Value (assigned by you as the supplier) to denote packaging level. In this example, select the Choice Data Source, and select 0 from the Data drop-down list.

10. Set the Data Source for Company Prefix Index to Fixed. You can type in your GS1-assigned Company Prefix Index. If you are simply following the tutorial and do not have a Company Prefix Index number, type in 10301.
11. Set the Data Source for Item Reference to Field, and select the item field from the Data column.
12. Set the Serial Number Data Source to Field, and select the serial number field from the Data column.

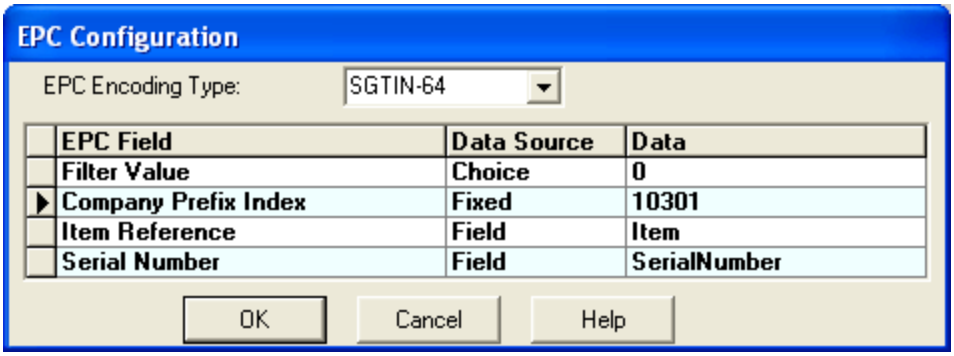

Figure 5.11: Specifying SGTIN-64 Data

13. Click **OK** to each of the dialogs to return to the label. Note that the Data Source dialog now shows settings summary for the configured block.

The table below shows the RFID tag value calculated from specific supplied values. These values can be supplied via the On-Demand Print application, LPS .pas file, .xml, .csv, ActiveX Control, .Net Control, WebX Control, or any Socket Integration method.

With the values used in the example above and shown in the table below, the calculated 64 bit encoding result = 8507A2B61A99091F.

Encoding Type	SGTIN-64
Filter Value	0
Company Prefix Index	10301
Item Reference	88845
Serial Number	10029343
Tag Value	8507A2B61A99091F

Table 5-17: Tag value derived from specific input

The following LPS pas file syntax demonstrates the equivalent print request using the Loftware Print Server.

```
*FORMAT, rfidLabel_sgtin64.lwl
*JOBNAME, SampleJob002
*QUANTITY, 1
```

```
*PRINTERNUMBER, 1
Item, 88845
SerialNumber,10029343
CompanyIndex, 10301
Filter, 0
*PRINTLABEL
```

The following figure shows the printed label (with other added fields). Although you cannot see the data for the RFID tag, it is there and is set to the value shown in the table above (8507A2B61A99091F). This example uses sample data; you will obtain different results by supplying your own data.

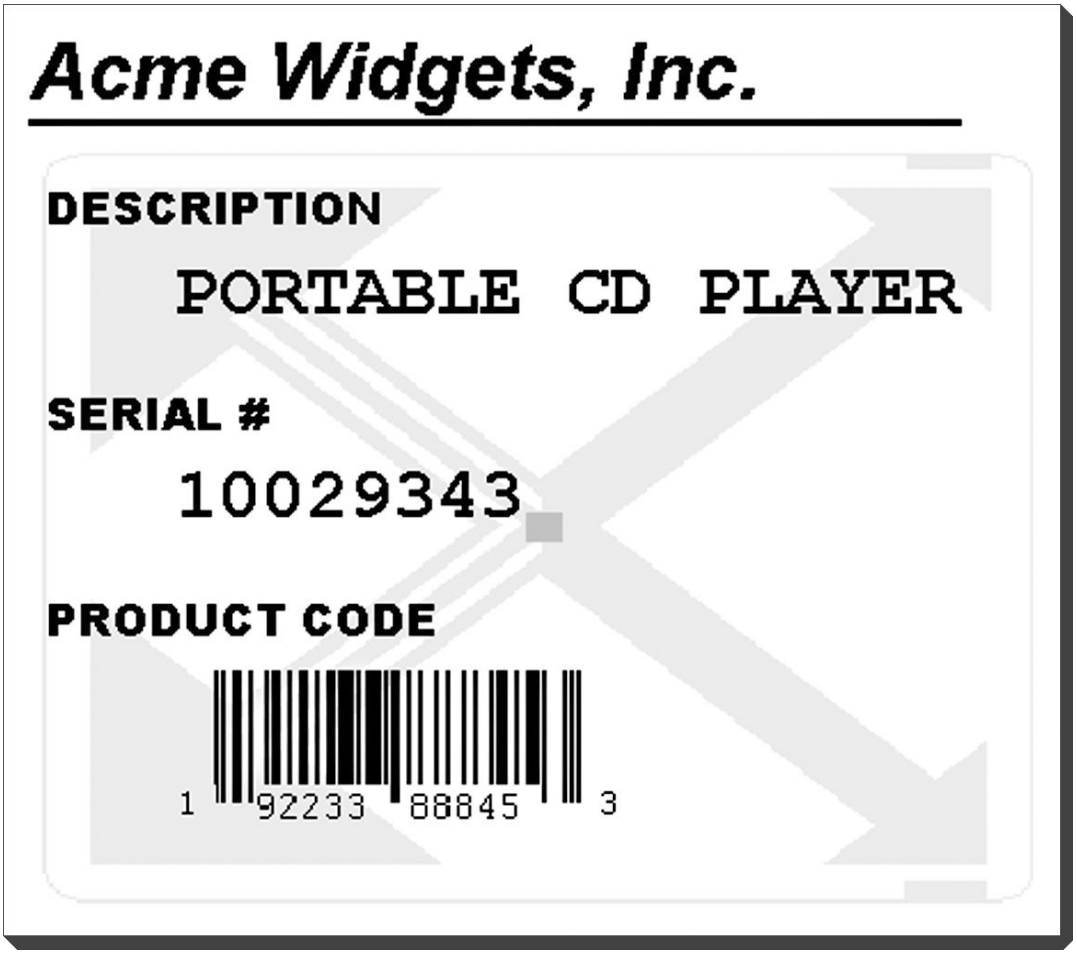

Figure 5.12: Printed label with supplied data

- No changes in the data required to originally print this label without the RFID tag were made. You can use your existing method of printing without modification and the EPC encoded data will be correct.
- The Check Digit is not included in the data; the printer automatically calculates it.
- The Company Prefix data cannot be used because 64 bit encoding does not allow for it. This example is for 64 bit tags only.

- Your label will be different. You need to apply these concepts to your own situation.
- The data for the label example can come from the On-Demand Print application, an LPS .pas file, .xml, .csv, ActiveX Control, .Net Control, WebX Control, or Socket Integration.
- You can hard-code the Company Prefix Index into the label as a non-printing field. You could also set its data source to Keyboard. If this is done, 1031 (your actual value will be different) would have to be sent with each label request.

Related Information
For all examples given in this section, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this guide.
For information on Company Prefix Index and the Object Naming Service, refer to the EPCglobal's web site.

Serial Shipping Container Code (SSCC)

The Serial Shipping Container Code is typically used for identifying specific information about cartons and pallets. It combines the GS1 Company Prefix and a serial reference, along with the Extension digit, to form an 18-digit unique identifier.

If you already have an existing SSCC label, it is a simple matter to convert it to an EPC SSCC RFID Smart Label. The biggest difference between the technique used for encoding SSCC from that used for SGTIN is that in SSCC, the serial number is usually already present. Because of this, all data for the RFID smart label can be automatically extracted from the barcode. This is what makes the following example so simple. Example 5 is very similar to that of Examples 2 and 3 in the SGTIN section.

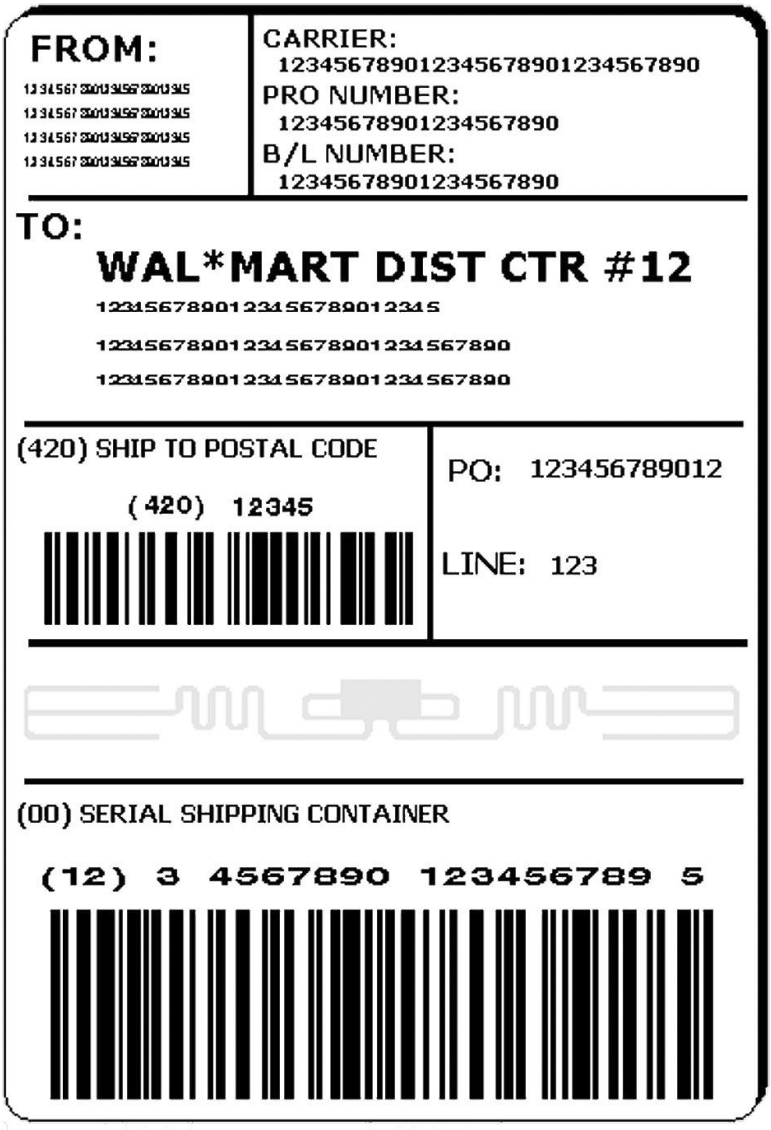

Figure 5.13: Typical SSCC pallet label with a GS1-128 (UCC-128) SSCC Barcode

SSCC-96 EPC Field	**Description**
Filter Value	Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix Length	Length of the GS1 Company Prefix. The lengths of the GS1 Company Prefixes assigned to companies vary.
SSCC	Unique SSCC number

SSCC-96 ALT EPC Field	**Description**
Filter Value	Used for pre-selection of basic logistics types, such as items, cases, and pallets

SSCC-96 ALT EPC Field	Description
Company Prefix	GS1-assigned Company Prefix
Serial Reference	Number assigned uniquely by the managing entity (the holder of the GS1 Company Prefix) to a specific shipping unit.
Extension Digit	Used to increase the capacity of the Serial Reference number within the SSCC

SSCC-64 EPC Field	Description
Filter Value	Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix Index	An index into a table that provides the Company Prefix as well as an indication of the Company Prefix's length. An index is assigned to companies that need to use the 64 bit tags, in addition to their existing GS1 Company Prefixes.
Serial Reference	Number assigned uniquely by the managing entity (the holder of the GS1 Company Prefix) to a specific shipping unit.

Example 5 - 96 bit SSCC

This example uses an existing SSCC label with a GS1-128 (UCC-128) barcode field. It demonstrates the ability to have the RFID label automatically derive its data from the barcode field without having to change any of the data that is sent in order to print the label.

1. Load (or design) the label that you want to use. This is a label that has a GS1-128 (UCC-128) barcode field.
2. Double-click the RFID antenna icon. Alternatively, select and then right click the RFID antenna icon. From the popup menu, select **Edit Data Source**.
3. From the **Data Source** dialog, select **Block Configuration** and then click **Configure**. This launches the **Block Configuration** dialog.
4. Set the Tag Type to UHF 96 bit Class 1.
5. Set the Data Source for the EPC block to EPC. Click the browse button (...) in the **Data** column to display the **EPC Configuration** dialog.
6. Set the EPC Encoding Type to SSCC-96.
7. For the Filter Value, set the Data Source to Choice and its Data value to 4. This value is suggested by Wal-Mart for pallet loads. Check your application or with your customer, as they may require a different value.
8. For the **Company Prefix Length**, choose the Choice Data Source and 7 for its Data value.

9. For the SSCC field, set the data Source to **Field**. For its Data value, select the GS1-128 (UCC-128) barcode field.
10. Click **OK** from each of the dialogs to return to the design area.

- This sample is valid for 96 bit RFID Smart Labels containing a GS1-128 (UCC-128) SSCC barcode field.
- The Extension Digit, Company Prefix, and Serial number are automatically derived from the data in the barcode field.
- You may use the SSCC-96 ALT encoding if you do not have an SSCC barcode from which to derive the data. The ALT encoding allows you to send your data as Company Prefix, Serial Reference, and Extension Digit. This can be set up in your label similar to *Example 6*.

Related Information
For all examples given in this section, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this guide.
Refer to the Serial Shipping Container Code (SSCC) section for a description of the fields on this dialog.

Example 6 - 64 bit SSCC Label

If you are using 64 bit labels, the RFID code cannot be derived from the existing barcode because the specification calls for a Company Prefix Index as opposed to the actual Company Prefix. This index is supplied to each manufacturer via the GS1 and EPCglobal US organizations as a temporary measure until they can comply with the 96 bit mandates.

This means that you will still have to supply the data to the barcode as you normally would and use non printing fields and formulas to derive the Serial Reference and the Company Prefix Index fields. This example is similar to Example 3 in the SGTIN section. This is a bit more complicated to set up than Example 5, but you still do not have to supply any extra data at print time.

SSCC-64 - Concatenates the following bit fields from most significant to least significant: Header, Filter Value, Company Prefix Index, and Serial Reference.

Note: This example cannot be used for Class 1 Generation 2 (C1G2) tag types. Generation 2 tags require a 96-bit EPC identifier.

1. Load or create the RFID Smart Label. This is a label that has a GS1-128 (UCC-128) SSCC barcode field from which the SSCC value will be derived. In addition, it has a Serial Number field which, for this example, has the following properties:
   a. **Printing Field** is set to **No**.
   b. **Data Source** is set to **Formula** using the Mid-String operation with the SSCC Barcode field, 11, and 9 values. The formula will be similar to "mid(Barc0001,11,9)." This will automatically grab 9 digits from the barcode starting at position. If your serial number is embedded differently, adjust the formula accordingly.
2. Double-click the RFID antenna icon. Alternatively, select and then right click the RFID antenna icon. From the popup menu, select **Edit Data Source**.

3. From the **Data Source** dialog, select **Block Configuration**, and click **Configure**.
4. Set the **Tag Type** to UHF 64 bit Class 1.
5. Set the **Data Source** for the EPC block to **EPC**. Click the browse button (...) in the **Data** column to display the **EPC Configuration** dialog.
6. Set the **EPC Encoding Type** to **SSCC-64**.
7. For the **Filter Value**, select **Choice** for its Data Source and its Data value to 4. This value is suggested by Wal-Mart for pallet loads. Check your application or with your customer, as they may require a different value. At the time of this writing, the filter values are still loosely defined.
8. For the **Company Prefix Index**, select **Fixed** for its Data Source and set its Data value to 14286. You may substitute your own Company Prefix Index here.
9. For the **Serial Number**, select **Field** for its **Data Source** and set its Data value to the Serial Number field set up in step 1.
10. Click **OK** from the dialogs to return to the design area.

The following table shows the EPC encoding for the sample data provided above. The 64 bit encoding of "089BE700003AA8E0" breaks down into the following constituent EPC components:

SSCC-64 encoding value derived from specific input	
Encoding Type	SSCC-64
Company Prefix Index	14286
Serial Number	3844320
Filter Value	4
Tag Value	089BE700003AA8E0

- This example is for 64 bit SSCC labels only.
- You may set the data source for CompanyPrefixIndex and SerialNumber to keyboard and supply the data for these fields at print time.
- Normal GS1-128 (UCC-128) data is supplied to the barcode as usual.
- The Company Prefix Index contained in the label is not the same as the Company Prefix contained in the barcode as explained above and in the EPC SSCC 64-bit specifications.
- The Serial Number contained in the label is the same as that in the barcode.
- If that the Serial Number in the barcode increments with each label, the calculated EPC Serial Number automatically increments as well.

Related Information
For all examples given in this section, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this guide.

Serialized Global Location Number (SGLN)

The Global Location Number (GLN) is a GS1 standard for uniquely identifying physical locations (for example, a building, a warehouse, a room in a building), legal entities (for example, a company, a subsidiary within a company, a buyer), or functional entities (for example, an accounting department, a ward). The GLN is a 13-digit number that consists of a GS1 assigned Company Prefix, a self-assigned Location Reference, and a check digit. At this time, the Serialized portion of the specification is reserved for future use and should not be used.

The SGLN encodings are very similar to those described for the SGTIN encodings above. You can encode an SGLN by following the SGTIN example 3 and example 4 in this section. Substitute SGLN for SGTIN and Location Reference for Item Reference. Serial Number is not used at this time.

SGLN-96 EPC Field	Description
Filter Value	Not part of the GLN but used for fast filtering and pre-selection of basic location types
Company Prefix Length	Length of the GS1 Company Prefix. The lengths of the GS1 Company Prefixes assigned to companies vary.
GLN	Global Location Number
Serial Number	A unique number assigned to an individual object by the managing entity.

SGLN-96 ALT EPC Field	Description
Filter Value	Not part of the GLN but used for fast filtering and pre-selection of basic location types
Company Prefix	GS1-assigned Company Prefix.
Location Reference	Number assigned by the holder of the GS1 Company Prefix to uniquely identify a location
Serial Number	A unique number assigned to an individual object by the managing entity.

SGLN-64 EPC Field	Description
Filter Value	Not part of the GLN but used for fast filtering and pre-selection of basic location types
Company Prefix Index	An index into a table that provides the Company Prefix as well as an indication of the Company Prefix's length. An index is assigned to companies that need to use the 64 bit tags, in addition to their existing GS1 Company Prefixes.

SGLN-64 EPC Field	Description
Location Reference	Number assigned by the holder of the GS1 Company Prefix to uniquely identify a location
Serial Number	A unique number assigned to an individual object by the managing entity.

Global Individual Asset Identifier (GIAI)

The Global Individual Asset Identifier (GIAI) is a GS1 standard for uniquely identifying and tracking fixed assets of an organization. GIAI is a combination of the GS1 Company Prefix and the individual asset number.

GIAI supports encoding 64-bit EPC and 96-bit EPC.

GIAI 64 EPC Field	Description
Filter Value	Used for pre-selection of basic asset types. These are the same for both 64-bit and 96-bit GIAI.
Company Prefix Index	An index into a table that provides the Company Prefix as well as an indication of the Company Prefix's length. An index is assigned to companies that need to use the 64 bit tags, in addition to their existing GS1 Company Prefixes. (For information on Company Prefix Index and the Object Naming Service, refer to the EPCglobal's web site.)
Asset Reference	A number assigned by the holder of an GS1 Company Prefix to an individual asset.

GIAI 96 EPC Field	Description
Filter Value	Used for pre-selection of basic asset types. These are the same for both 64-bit and 96-bit GIAI.
Company Prefix Length	Length of the GS1 Company Prefix. The lengths of the GS1 Company Prefixes assigned to companies vary.
GIAI	A unique identifier assigned by the managing entity to a specific asset. It includes the Company Prefix and the individual asset reference.

GIAI 96 Alt EPC Field	Description
Filter Value	Used for pre-selection of basic asset types

GIAI 96 Alt EPC Field	Description
Company Prefix	Variable length number assigned by GS1 to a managing entity (a company or an organization)
Asset Reference	Variable length number within a GIAI assigned by the holder of an GS1 Company Prefix to uniquely identify an individual asset.

Example 7 - GIAI-96 Alt

In this example, the **Asset Reference** field obtains its value from the keyboard.

1. Load (or design) the label that you want to use.
2. Add a variable text field, AssetRef. Leave its Data Source set to **Keyboard**. For the **Printing Field**, select **No**.
3. Doubl- click the RFID antenna icon. Alternatively, select and then right click the RFID antenna icon. From the popup menu, select **Edit Data Source**.
4. From the **Data Source** dialog, select **Block Configuration** and then click **Configure**. This launches the **Block Configuration** dialog.
5. Set the **Tag Type** to **UHF 96 bit Class 1.**
6. Set the **Data Source** for the EPC block to **EPC**. Click the browse button (...) in the **Data** column to display the **EPC Configuration** dialog.
7. Set the **EPC Encoding Type** to **GIAI-96 ALT**.
8. For the **Filter Value**, set the **Data Source** to **Choice** and its Data value to 0.
9. For the **Company Prefix**, choose the **Fixed Data Source** and type in 12345 for its Data value. You may substitute your own Company Prefix here.
10. For the **Asset Reference** field, set the **Data Source** to **Field**. For its Data value, select **AssetRef**.
11. Click **OK** from each of the dialogs to return to the design area.

Related Information
For all examples given in this section, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this guide.

Global Returnable Asset Identifier (GRAI)

The Global Returnable Asset Identifier (GRAI) is a GS1 standard for uniquely identifying and tracking reusable assets of an organization. A returnable asset identifier is used to track assets during their use.

GRAI supports encoding 64-bit EPC and 96-bit EPC.

GRAI 64 EPC Field	Description
Filter Value	Used for pre-selection of basic asset types

GRAI 64 EPC Field	Description
Company Prefix Index	An index into a table that provides the Company Prefix as well as an indication of the Company Prefix's length. An index is assigned to companies that need to use the 64 bit tags, in addition to their existing GS1 Company Prefixes. For information on Company Prefix Index and the Object Naming Service, refer to the GS1 web site.
Asset Type	Number assigned uniquely by the managing entity (the holder of the GS1 Company Prefix) to a particular class of asset
Serial Number	A unique number assigned to an individual object by the managing entity.

GRAI 96 EPC Field	Description
Filter Value	Used for pre-selection of basic asset types
Company Prefix Length	Length of the GS1 Company Prefix. The lengths of the GS1 Company Prefixes assigned to companies vary.
GRAI	A unique identifier assigned by the managing entity to a specific returnable asset.

GRAI 96 Alt EPC Field	Description
Filter Value	Used for pre-selection of basic asset types
Company Prefix	Assigned by GS1 to a managing entity (a company or an organization)
Asset Type	Number assigned uniquely by the managing entity (the holder of the GS1 Company Prefix) to a particular class of asset
Serial Number	A unique number assigned to an individual object by the managing entity (the holder of the Company Prefix).

Sending Data Directly to the Field

This technique allows you to send the actual hexadecimal encoding directly to the RFID field on your label without the need for special fields or settings. This only works if you have pre-calculated the EPC or DOD codes for all of your products and made them available to your application.

Note: This technique works for all types of EPC encoding including GID-96, SGTIN, SSCC, and SGLN, as well as DOD encoding. Essentially, ease of setup is traded for more complex data calculations on the application side.

Supply Data Directly

1. Select the RFID field on your label.
2. Give your RFID field a descriptive field name using the Field Name property. For example, use RFID_1.
3. Set the data source for the RFID field Data Source to **Keyboard**.
4. Save your label.
5. Calculate the data value that will be encoded on the RFID label. This must be in hexadecimal format. You can use the Loftware RFID Calculator to obtain the hex value based on your input.

For example

the following field values for a SGTIN 64 would result in the hex value **84E60027760003E8**.

Company Prefix Index = 10032

Item Reference = 5051

Serial Number = 1000

Filter Value = 0

This is the value that will be encoded on the RFID label. When you print your label using any Loftware printing method, supply the pre-calculated data in hex format as shown in the above example.

Example 8 - 96 bit Sample Data Supplied Directly

Create an LPS pas file that contains the data you wish to send. Your request might look something like the following:

```
*Format, Acme.lwl
 *PrinterNumber, 1
 Description, PORTABLE CD PLAYER
 RFID_Tag, 30183BF980622BC000000C81
 *PrintLabel
```

To print the label, follow the instructions for sending a pas file to the LPS.

Example 9 - 64 bit Sample Data Supplied Directly

Create an LPS XML file that contains the data you wish to send. Your request might look something like the following:

```
<labels _FORMAT="SGTIN64.lwl" _QUANTITY="1" _PRINTERNUMBER="1">
  <label>
    <variable name="UPCCode">19223388845</variable>
    <variable name="DESCRIPTION">PORTABLE CD PLAYER</variable>
    <variable name="RFID_Tag">8507A2B61A99091F</variable>
  </label>
 </labels>
```

```
<labels _FORMAT="DOD64.lwl" _QUANTITY="1" _PRINTERNUMBER="1">
  <label>
   <variable name="DESCRIPTION">PORTABLE CD PLAYER</variable>
   <variable name="RFID_Tag"> CE71133E31FC1C35</variable>
  </label>
</labels>
```

To print the label, you can use any printing method, for example, drop the file to a scan directory.

Using the Loftware RFID Calculator

As you work through the examples given in this section, you may want to practice encoding and decoding EPC or DOD data for verification purposes. Loftware provides a utility to help you with this. It can be launched from the **Tools** menu of Loftware Label Manager. It is a stand-alone application and can also be launched by double clicking the EPC_Utils.exe file from the Windows Explorer. The RFID Calculator can also encode and decode the EPC as a Uniform Resource Identifier (URI). A clear understanding of the specifications mentioned in the last section is a prerequisite to using this tool. The examples in this section depict some instances where this utility program may be used as a check.

Example 10 - Decoding the Hex Data

Scenario 1 (Decode)

You are reading a tag. The reader software reports what is programmed into the tag, which is a string of hexadecimal data. The Loftware RFID Calculator can break the data down into its constituent parts based on the encoding type:

1. From the LLM Options menu, select **RFID Calculator**.
2. Type the hexadecimal value of the tag into the HEX Value entry field.
3. Click **Decode**. The encoding type and the values for each section of data applicable to that type are displayed.

Note: In addition to the decoded result, the decoded URI value is also displayed.

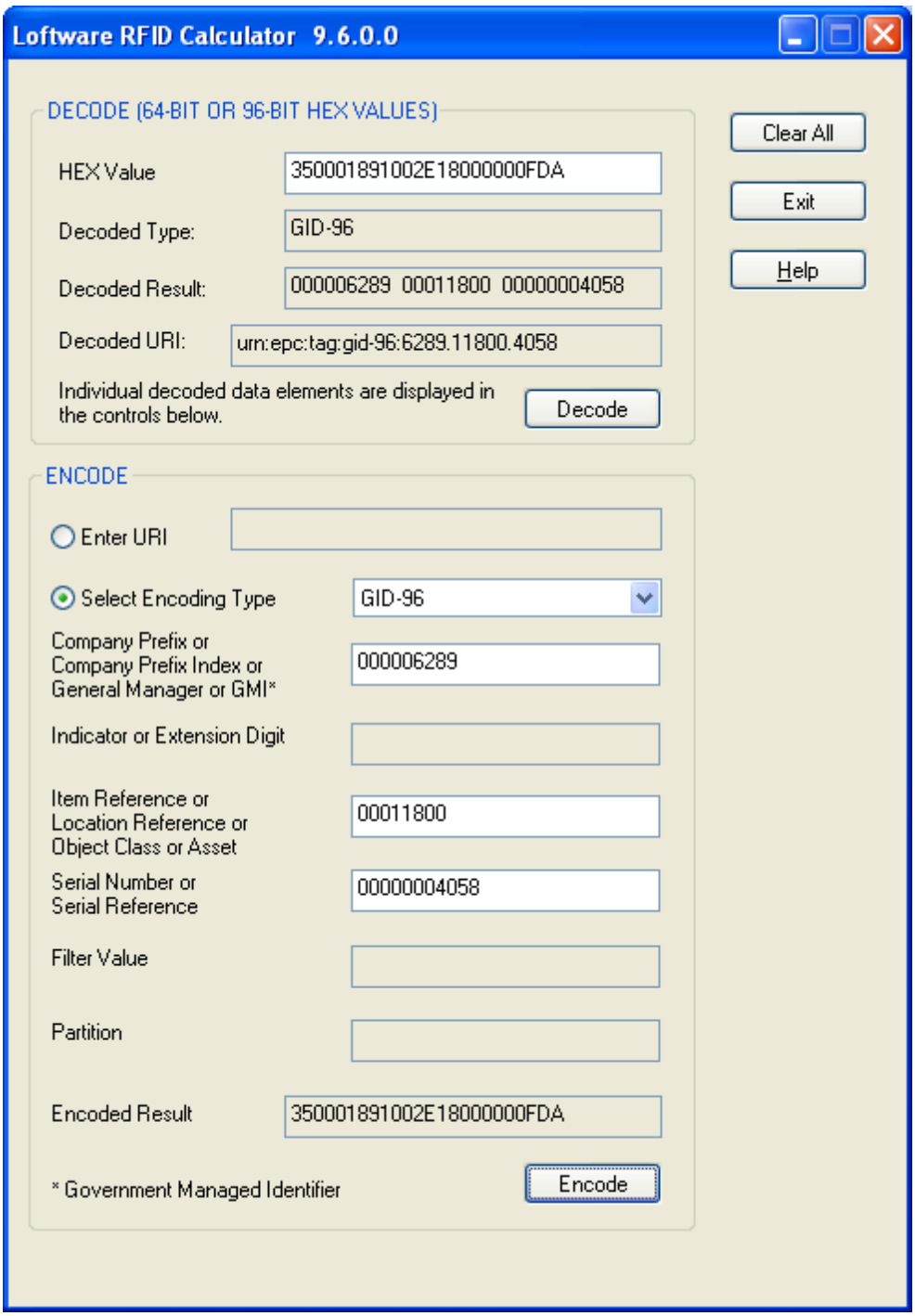

Figure 5.14: Loftware RFID Calculator

Example 11 – Encoding Data

Scenario 2 (Encode)

You have designed an RFID Smart Label as described in the preceding sections. After printing the label with your data, you want to make sure that the EPC / DOD code in the tag obtained the correct value. Use the bottom section of the utility to enter the encoding type and your data.

The purpose of this example is to verify the values using the Loftware RFID Calculator. In this example, SGTIN-96 ALT encoding was used with the following values:

SGTIN-96 ALT encoding sample data	
Encoding Type	SGTIN-96 ALT
Filter Value	3
Company Prefix	614141
Item Reference	527
Serial Number	3201
Indicator Digit	0

1. Select Options | RFID Calculator.
2. Click **Select Encoding Type**, and select **SGTIN-96 ALT** from its drop-down list.
3. Type in the values from the table above.
4. Click **Encode**.

The Encoded Result in hex format is shown: `307A57BF400083C000000C81`.

To obtain the URI value, cut and paste the Encoded Result value into the HEX Value box of the **Decode** section, and then click**Decode**. Conversely, to encode a URI value, click **Enter URI**, type in the URI, and then click **Encode**.

Printing RFID Smart Labels

Printing an encoded smart label is very similar to printing a regular barcode label. Once you have created your RFID Smart Label and configured the target RFID printer, the smart label can be printed using any Loftware application or development tool. Two of the development tools have the capability of passing the calculated EPC/DOD data back to the front end application.

Related Information
Refer to the *Loftware Print Server User's Guide* for more information.

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With an increasing need to have goods and services delivered in a timely manner to all corners of the globe, today's businesses need to have the ability to print labels in many natural languages easily and quickly. Loftware provides this functionality, from prompting operators in their natural language to printing in both single and double byte character sets and utilizing Unicode.

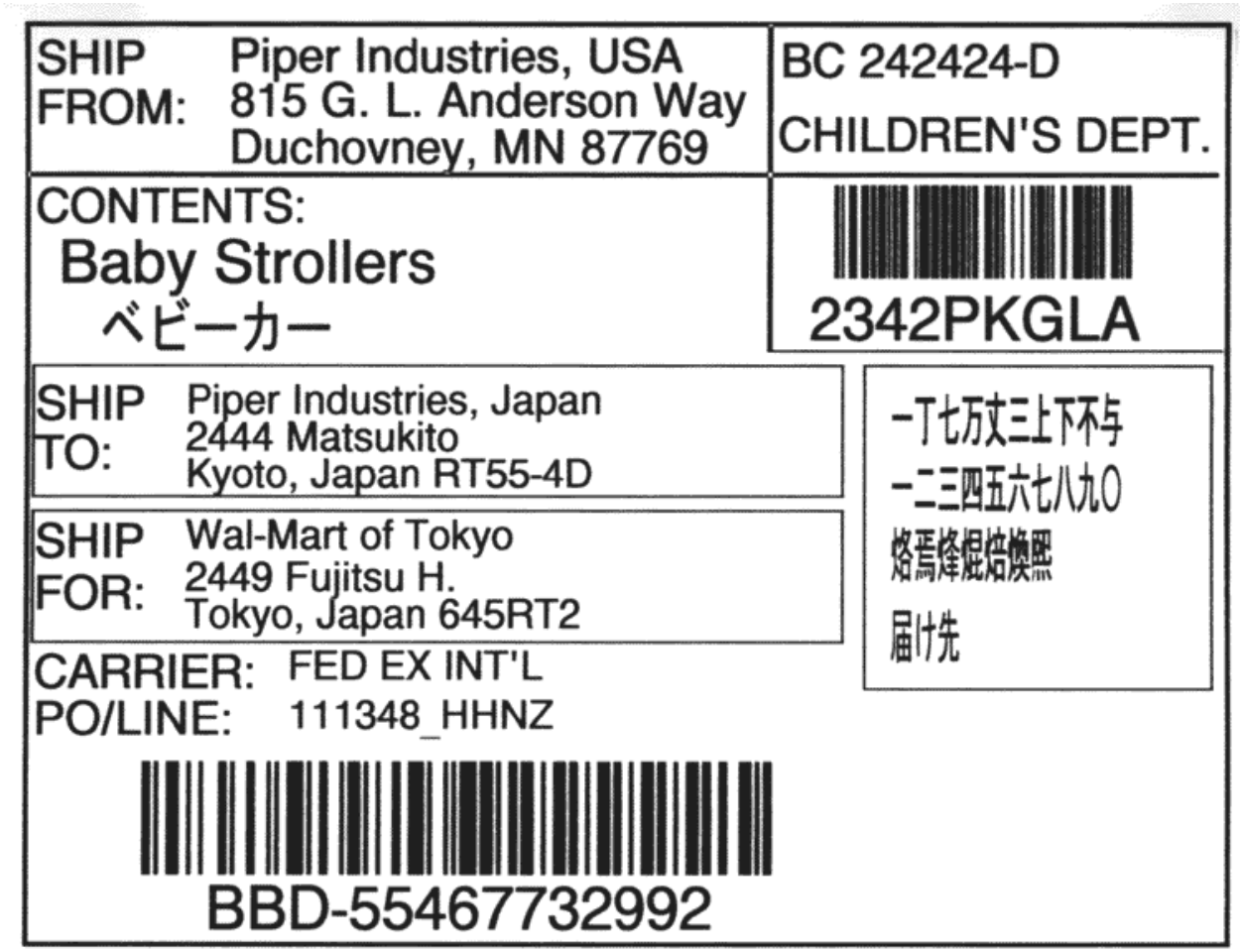


Figure 6.1: Label displaying a double-byte Japanese Character Set

Loftware Support for Single and Double Byte Fonts

While Loftware has always supported the printing of single byte fonts on a per-printer basis, that feature was expanded to a per-label basis in the **Label Options** dialog. This allows you to print labels in different languages to the same printer.

Loftware supports international fonts native to the various Printer Families that are able to support this, as well as support for sending a bitmap of the font to the printer when the printer does not support double-byte characters. While the latter method is slower, it does allow these fonts to be printed. Again, this can be used on a per printer, per label, and even a per-field basis. This means that different Asian (double-byte) fonts can be printed on the same label. A section describing in detail the per printer, per label and per field concepts follows.

While no keyboard entry of Unicode or Double byte fonts is supported, you can connect Loftware to a Unicode database field or pass the data through one of the following:

- .pas file
- .csv file
- .xml file
- Loftware's ActiveX Client Control

Definitions

The following are terms and definitions related to International Printing.

Term	Definition
ANSI Code Pages	ANSI code page is a generic term used in Windows to describe a collection of code pages used for character encoding in graphical Win32 applications and fonts.
ASCII Characters	ASCII is a code for representing English characters as numbers, with each letter assigned a number from 0 to 127. For example, the ASCII code for uppercase M is 77. Most computers use ASCII codes to represent text, which makes it possible to transfer data from one computer to another.
Big Endian	Refers to which bytes are most significant in multi-byte data types. In Big-Endian architectures, the leftmost bytes (those with a lower address) are most significant. Swapping integer data between computers of different types (see Little Endian) is a difficult problem unless you convert the information into ASCII characters. Many mainframe computers use a Big-Endian architecture.
CJK	A collective term referring to the common features of Chinese, Japanese, and Korean writing systems.
Character Set	A character set is only a collection of characters. Characters from different language systems are conventionally divided into different "character sets." For example, a font for use in Russia includes glyphs representing the Cyrillic character set.

Term	Definition
Code Pages	A code page, or character set, defines a collection of characters, numbers, punctuation, symbols, and special characters for a particular language. Using a process called encoding, each character in the code page is assigned a numeric value called a code point. Computer hardware, software, and operating systems can then exchange information for a particular language or for a collection of languages using these code points.
DBCS	Double Byte Character Set. DBCS pages may be a mixture of single byte and double byte characters.
Double byte	Double byte is usually used in reference to a character set which supports more than 256 characters. Consisting of 16 bits, two bytes (or octets) can support numbers ranging from 0 (zero) to 65,535, i.e. 65,536 unique numeric values.
Glyph	A glyph is a representation of a character. The character "Capital Letter A" is represented by the glyph "A" in Tempus Sans ITC Bold. A font is a collection of glyphs.
Little Endian	Refers to which bytes are most significant in multi-byte data types. In Little-Endian architectures, the rightmost bytes are most significant. Swapping integer data between computers of different types (see Big Endian) is a difficult problem unless you convert the information into ASCII characters. Most modern computers, including computers, use the Little-Endian system.
Natural Language	A natural language is a term to describe the various human languages spoken on the planet.
OEM Code Pages	The term OEM code page refers to code pages used in MS-DOS that have built-in hardware support to allow rapid display of characters on the computer console. The first 128 characters in OEM code pages are defined by the ASCII standard.
Octet	Also known as a byte, an octet consists of 8 bits, and can represent numeric values ranging from 0 (zero) to 255.
RAM	Random Access Memory, a type of computer memory that can be accessed randomly; that is, any byte of memory can be accessed without touching the preceding bytes. RAM is the most common type of memory found in computers.
ROM	Read Only Memory, computer memory on which data has been prerecorded. Unlike main memory (RAM), ROM retains its contents even when the computer is turned off. Fonts are often stored in ROMs.
Simplified Chinese	The Chinese ideographic writing system as used in the People's Republic of China and Singapore.
Single byte	Single byte is usually used in reference to a character set, which supports a maximum of 256 characters. Consisting of 8 bits, one byte (or octet) can support numbers ranging from 0 (zero) to 255, i.e. 256 unique numeric values.
Symbol Set	A set of glyphs.
TrueType format	Originally devised by Apple Computers and later extended by Microsoft, TrueType is a font format, which can support a large number (max 65,536) of characters.

Term	Definition
Unicode	A standard for representing characters as integers. There are seven character encoding schemes in Unicode: UTF-8, UTF-16, UTF-16BE, UTF-16LE, UTF-32, UTF-32BE and UTF-32LE. UTF-16, for example, uses 16 bits per character, which means that it can represent more than 65,000 unique characters. This number has become necessary for some languages, such as Greek, Chinese and Japanese. Many analysts believe that as the software industry becomes increasingly global, Unicode may eventually replace ASCII (which uses 8 bits for each character) as the standard character coding format.

Common TrueType Double-byte Character Sets

Term	Definition
Chinese Big 5	Traditional Chinese used in Taiwan and Hong Kong
GB 2312	Encoding standard for Simplified Chinese, used in the People's Republic of China and in Singapore. (Similar to GBK)
Hangul	The syllabary (or, syllabic alphabet) used to write the Korean language.
Shift JIS	Common Japanese character set consisting of around 7000 characters, which also includes a single byte set and is able to interpret ASCII hex codes correctly

Common Native Double-byte Character Sets

Term	Definition
Big 5	Traditional Chinese used in Taiwan and Hong Kong.
GBK	Encoding standard for Simplified Chinese, used in the People's Republic of China and in Singapore.
Hangul	The syllabary (or, syllabic alphabet) used to write the Korean language.
JIS	Common Japanese character set consisting of around 7000 characters.
Shift JIS	Common Japanese character set consisting of around 7000 characters, which also includes a single byte set and is able to interpret ASCII hex codes correctly.
Unicode	An international standard for representing a broader character set using a multi-byte encoding for each letter. This allows the encoding of 65,536 characters in a single font instead of 256: essentially all the characters for every language in the world, each with a unique ID.

Printing Hierarchy with Character Sets

The printing of both multi-byte and single byte characters in Loftware can take place on a per-printer, per-label, or a per-field basis. It is important to understand this terminology and the hierarchy in which label printing takes place. The order of precedence in which labels are printed is described below.

- **Per-Printer** – When you configure a printer in Loftware Label Manager Design Mode, if you set a particular Character Set in Printer Options (F6 or File | Devices) and print the label, the label is printed per-printer, which means that all labels printed with this printer use this character set.
- **Per-Label** – If you change the Character Set in Label Options, this overrides the printer's (per-printer) setting for the Character Set, and the label is printed per-label, for this label ONLY.
- **Per-Field** – If you open a label, click a field, and use the Language Properties Wizard, you can override the multi-byte character set in BOTH Printer and Label Options for that field only; make sure the Override box is checked. Or, if printing a TrueType Font sent as a bitmap, this bitmap is basically set per field as any other bitmap would be.

Hierarchy Example

The printing hierarchy example below is with a Zebra 170xiIII printer. You can test any printer by completing the following.

Look at the Device Options (LLM Device Configuration Options button). The default Character Set is USA 1,and the default DB (Double-byte) Character Set is Unicode, as seen in the following figure: Changes to the Character Set here are per printer.

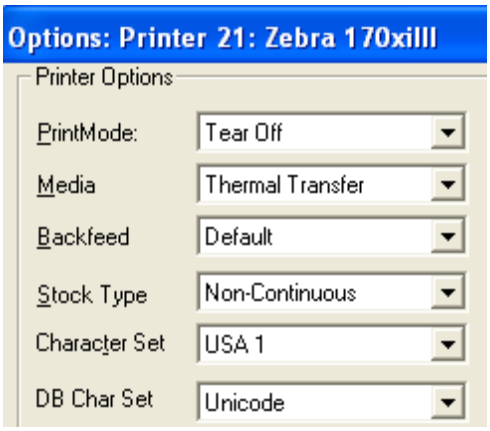


Figure 6.2: Character Set settings in Printer Options (Per-printer)

When the label options for this printer are opened, the following defaults for Character Sets (single and double-byte) are displayed:

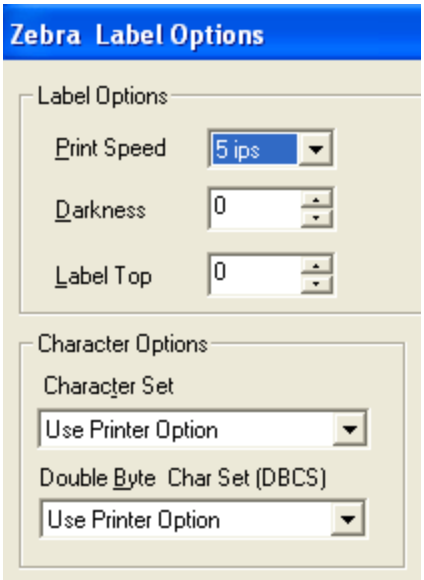


Figure 6.3: Character Set defaults in Label Options

The default Label Options (in this particular printer) for both double and single character sets are set to **Use Printer Option** in the figure. This means that the Character Set seen in Device Options is used when printing the label. If you wanted to change this default character set, per label, meaning for this label only, select a different character set. The choices vary for each family of printers.

- Click **OK**, and the character set is changed, thus overriding the Device Option, for this label ONLY.

Related Information
To override both the Device and Label Options Character Set, and set these options per field, follow the instructions in the *Language Properties Wizard* section of this guide.

Single Byte Fonts

Single-byte Character fonts are the standard fonts that Loftware has always supported. The fonts cover a wide range of languages, including those of Western Europe and the Middle East. Most languages outside of the Asian continent are mapped through single-byte fonts.

Default Single byte Character Set

The default single byte character set has always been available on a per-printer basis, as displayed below:

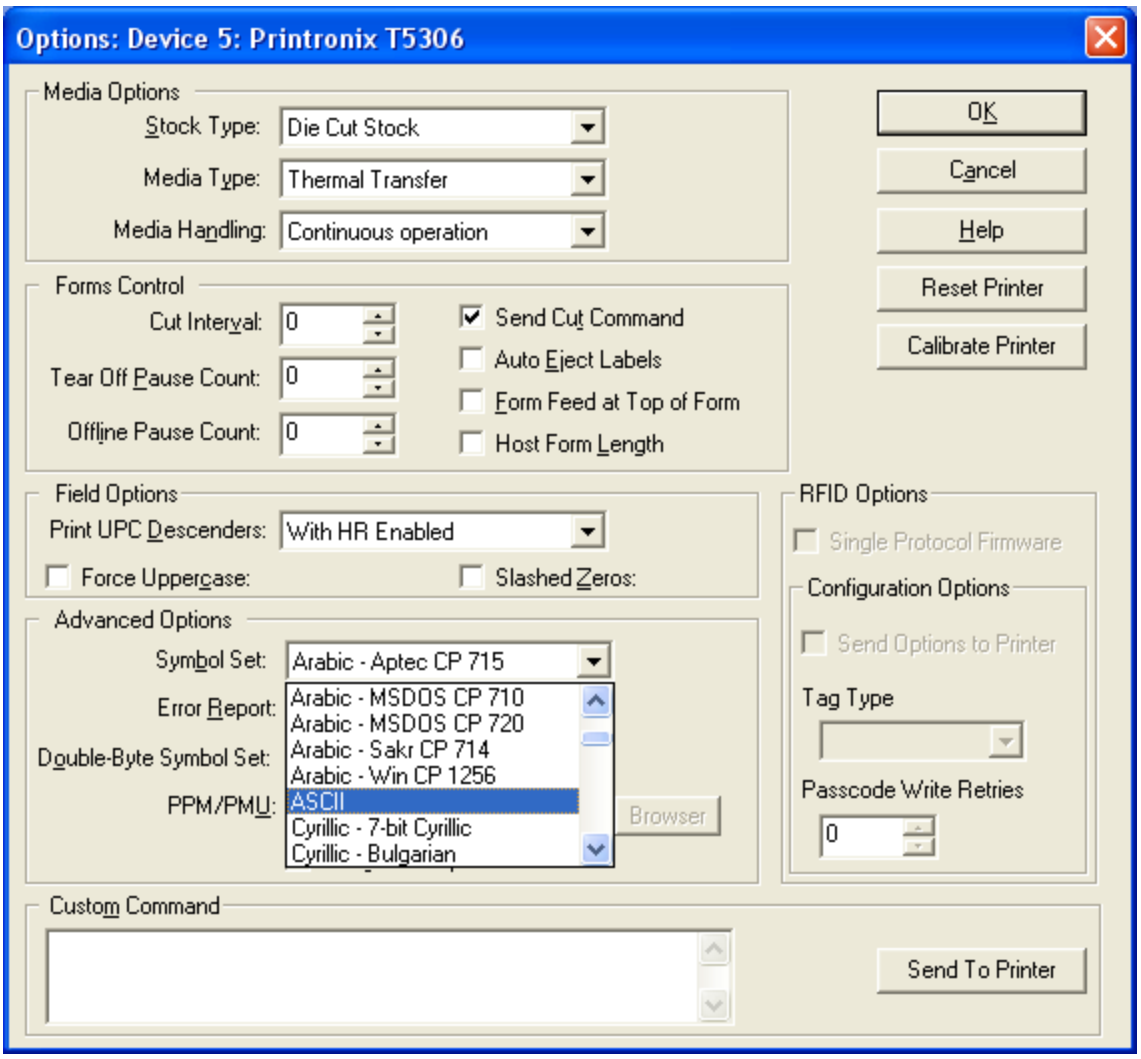


Figure 6.4: Character Set in Printer Options Dialog Box

When chosen in the **Device Options** dialog box, this sets the Character Set, Symbol Set, or Language (these are synonymous terms depending on the Printer Family to which you are printing) for any labels that are printed to that Printer. The method described in the following section outlines how to create an Operator Input Prompt in an international language.

The single byte characters are also available on a per label basis through Media Setup/Label Options in Design Mode. This presents a great time-saver to companies wishing to send labels to the same printer, but print them in a variety of languages. An example of per-label printing of international characters follows the next section.

Prompting in International Languages

Creating an input prompt in an international language allows the operator to add the required information quickly and accurately, as the prompt for each field is displayed in their natural language.

The figure below is an example of a customized On-Demand Print Form displaying the operator inputs in Spanish, while the actual data fields the operator has entered are in English.

Note: These instructions are for single byte fonts only.

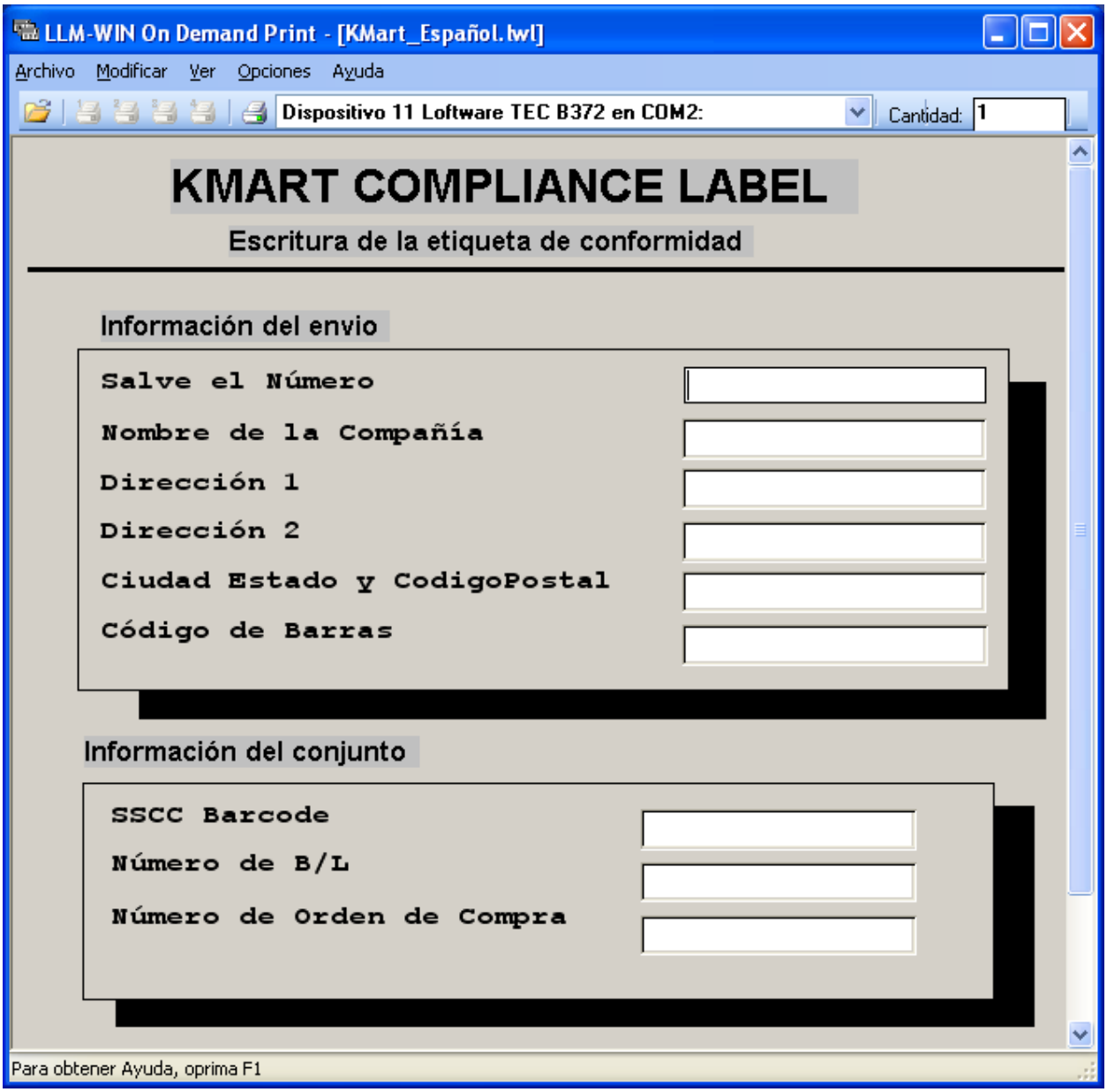


Figure 6.5: Sample K-Mart Compliance Template with Operator Input in Spanish.

Loftware has developed some sample templates and labels that have operator input prompts and/or field names in French, German and Spanish. These may be found on the Loftware Web site, www.loftware.com under the Support Section or on your Loftware CD.

Note: Creating an Operator prompt with international character sets is NOT the same as printing labels with international character sets. More information on printing these labels follows.

Related Information
For information on adding input prompts in an international language, refer to *Creating International Language Input Prompts in LLM ODP* in this guide

Creating International Language Input Prompts in On Demand Print

1. In Loftware Label Manager, open a label in Design Mode, or create a new label in Design.
2. Open the operator input screen (On-Demand Print Form) by clicking the switch icon .

The On-Demand Print Form and its accompanying **Properties** box are displayed. For the following example, the **Properties** box is used to change the Input Prompt for the 3rd line, top section **Company Name** field to the Spanish equivalent, which is "Nombré de la Compañía."

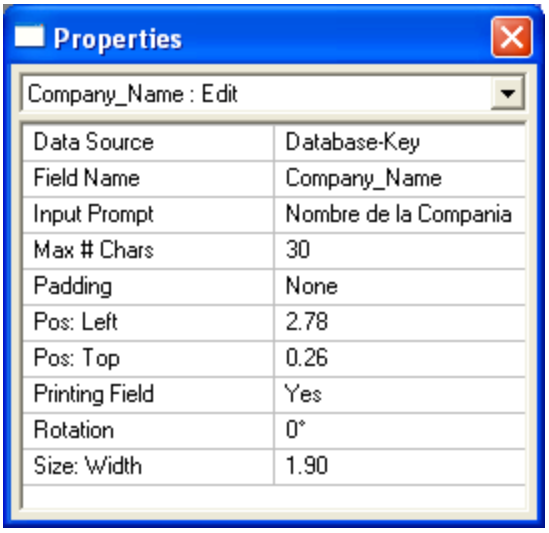


Figure 6.6: Properties Box with Spanish Input prompt for the operator

To create international language characters in the **Properties** box.

Creating International Language Characters

1. Highlight the Input Prompt field.
2. Type "N o m b r". And then while holding down the Alt key type "130", let go of the Alt key. The character é is displayed.

Note: Numerals must be entered by using the numeric keypad and with NumLock on.

3. Continue typing as in the previous steps, and when an international character is needed, add it in the same manner.

Commonly used characters

Letter	Key Combo	Letter	Key Combo	Letter	Key Combo
é	ALT 130	ë	ALT 137	ê	ALT 136
á	ALT 160	ä	ALT 132	â	ALT 131
í	ALT 161	ï	ALT 139	î	ALT 140
ó	ALT 162	ö	ALT 148	ò	ALT 149
ú	ALT 163	ü	ALT 129	û	ALT 150
ñ	ALT 164	Ñ	ALT 165	à	ALT 133

You may have to try different fonts to get the desired result.

It is important to understand that prompting the operator is not the same thing as printing labels using international characters. Prompting is what you see on the screen that facilitates data entry, while printing what you see on a label to a printer is a much more complicated endeavor.

Related Information
For more information, refer to the *Designing Labels* and *On Demand Print sections* of this guide.
A more complete extended ASCII table is found in Reference Tables section of this guide.

Printing Encoded Data, Per-Printer Method

With barcode label applications traversing all industry segments and becoming more internationalized, there are increased requirements for printing characters that fall outside of the traditional American English alphabet character sets. While getting the Operator Input Prompt written in an international language is relatively easy, getting labels printed using international characters is a different and sometimes complex matter. Three examples of possible printing methods follow. These examples were created using typical Native printer fonts and are intended to give you a cursory understanding of this subject . Keep in mind that if you are using a special TrueType font, such as Wingdings or a Native OCR type font, the results you get are guaranteed to NOT be what you are looking for.

In your day-to-day operation, it is not feasible to have your input operator look up characters in tables and convert them. Creating a database that utilizes these characters is time saving; an example of how to do this follows:

Note: The following examples assume the use of the U.S. English Version of Windows, as well as a U.S. English Keyboard.

Method #1: Using the IBM Extended ASCII Chart

The following example uses the ASCII Extended Chart found in the Reference Tables section of this guide. Most of the international characters you may want to use are located on this chart, and they work as displayed with most of the popular Native Fonts.

1. Create a database using any database utility. The database below is a sample included on the CD.

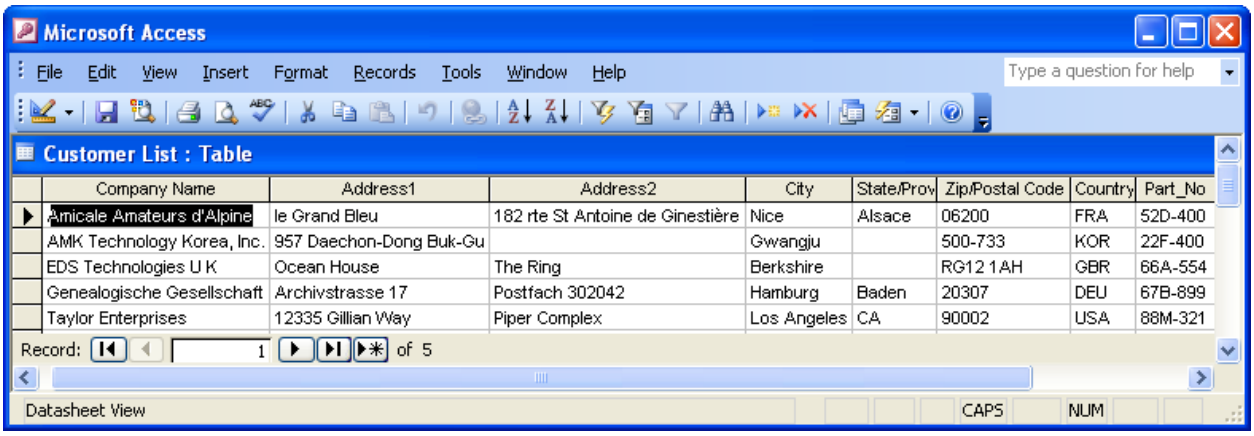

Microsoft Access
File Edit View Insert Format Records Tools Window Help
Type a question for help
Customer List : Table
Company Name | Address1 | Address2 | City | State/Prov | Zip/Postal Code | Country | Part_No
Amicale Amateurs d'Alpine | le Grand Bleu | 182 rte St Antoine de Ginestière | Nice | Alsace | 06200 | FRA | 52D-400
AMK Technology Korea, Inc. | 957 Daechon-Dong Buk-Gu | | Gwangju | | 500-733 | KOR | 22F-400
EDS Technologies U K | Ocean House | The Ring | Berkshire | | RG12 1AH | GBR | 66A-554
Genealogische Gesellschaft | Archivstrasse 17 | Postfach 302042 | Hamburg | Baden | 20307 | DEU | 67B-899
Taylor Enterprises | 12335 Gillian Way | Piper Complex | Los Angeles | CA | 90002 | USA | 88M-321
Record: 1 of 5
Datasheet View
CAPS
NUM

Figure 6.7: Sample Microsoft Access© Database

2. Enter international characters by following the steps from the previous section and the Extended IBM ASCII Chart.
3. Connect the database to the fields on your label, and save the label. See the Data Sources section in this User's Guide if you are not sure how to do this.
4. Click the ODP icon, and use the browse feature to choose the data you want to print. See "Filtering and Browsing a Database" for a more detailed description of browsing.

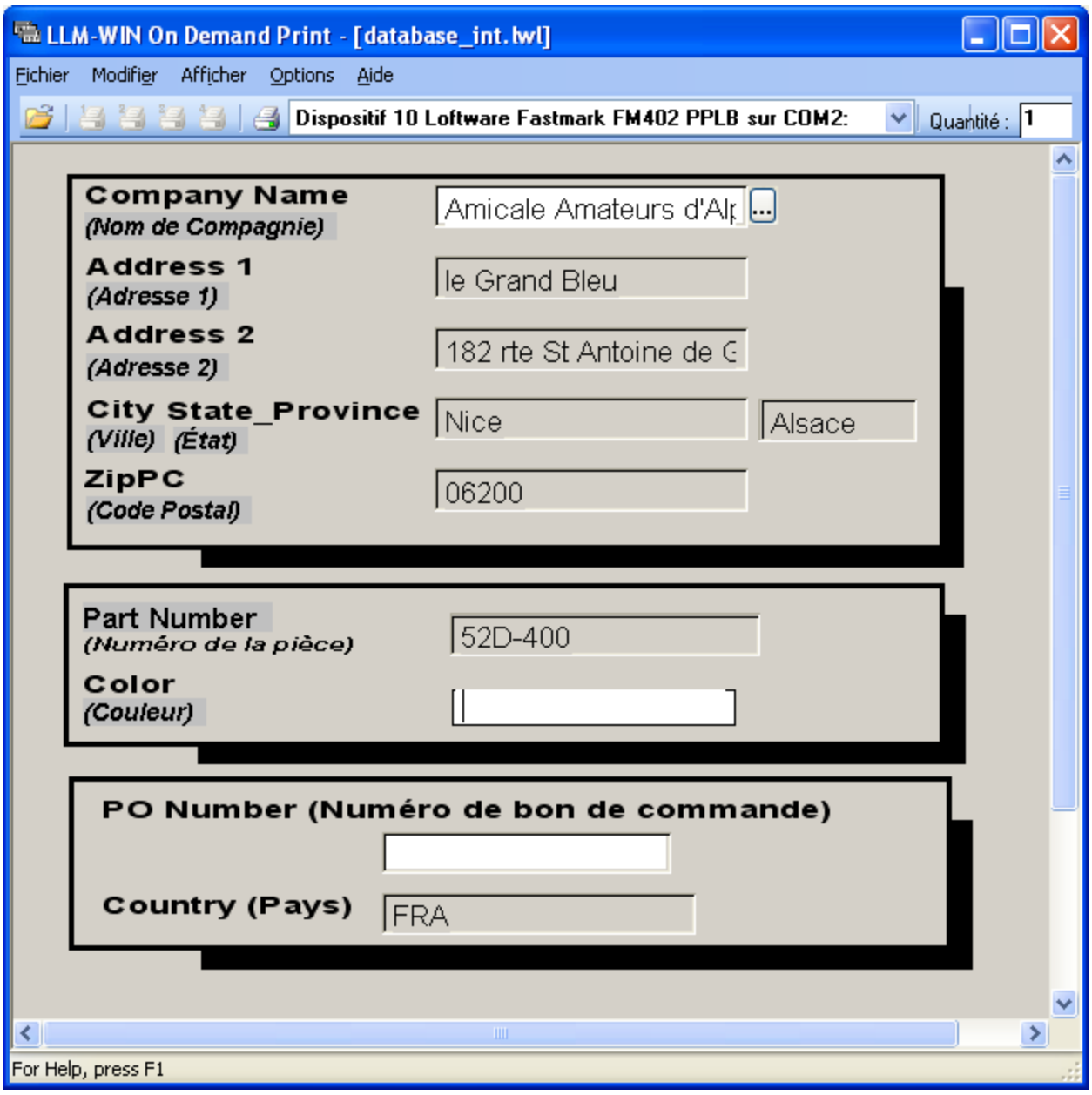


Figure 6.8: Sample ODP Using a Database Containing International Characters

5. Print the label using the print icon, or File | Print from the menu bar.

Method #2: Using a specific Printer's International Character Set

If the Extended ASCII Chart does not have a specific character that you want to print, you may be able to find it by utilizing an International Character Set chart for a particular Printer Family and Printer Model, such as the one displayed in the following table. To understand how to use Loftware's international language settings combined with a printer's International Character Set, please investigate your printer's manual thoroughly first. Using one of the tables, find the character that you want to use.

Example: A label is created for an Intermec EasyCoder PX4i in which the character "ç" is to be used (as in the term "Français"). This character is not found on an U.S. ASCII Keyboard, but it can be added in the following manner, as can other printers with similar options:

1. Open the label in design view, or create a new label
2. Open File | Devices, or F6.
3. Highlight the line that contains the Intermec printer.
4. Click **Options**.

The options for the Intermec printer are displayed:

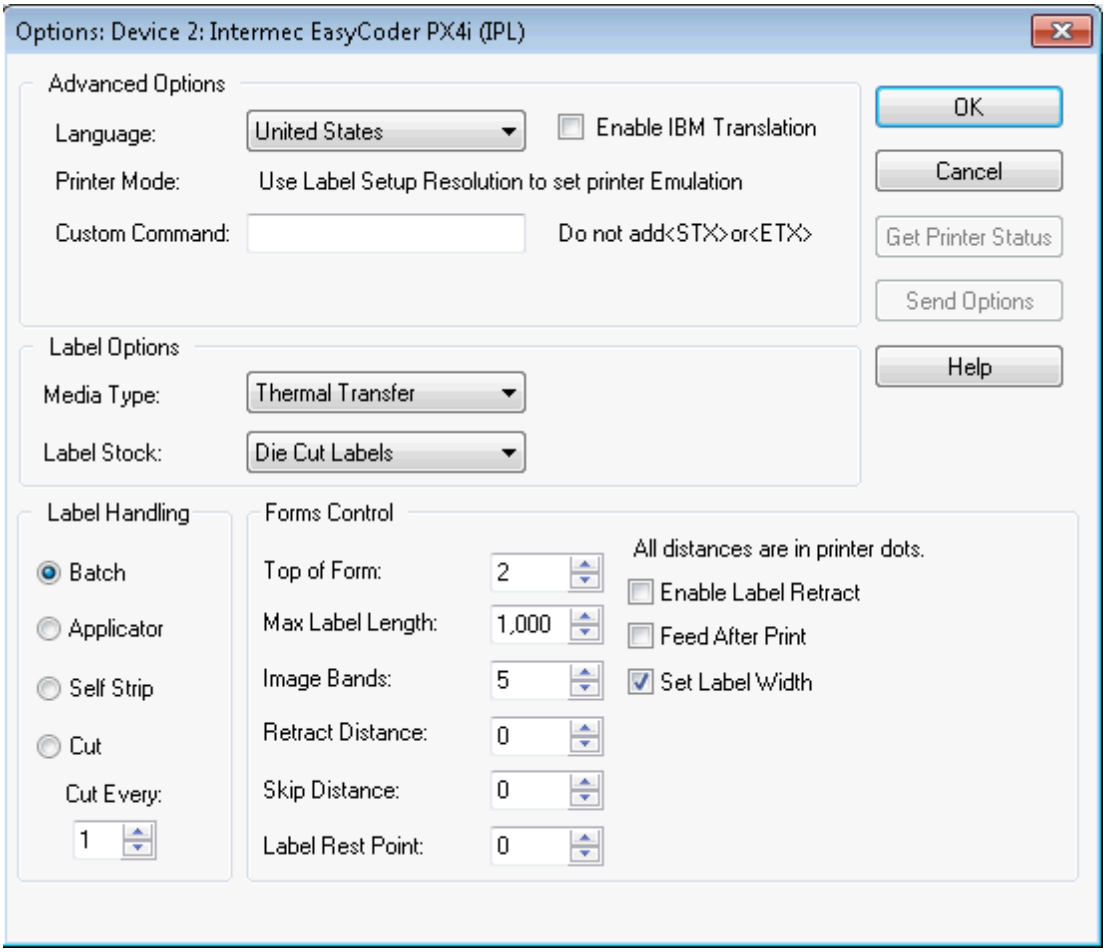


Figure 6.9: Intermec Printer Options

5. Choose **France** from the **Language** drop-down list in the **Advanced Options** section.
6. Save the label, enter a fixed or variable text field, enter:

```
Fran\ais
```

7. Print the label. The character "\" is displayed as "ç", thus adding the desired character.

A portion of the advanced character table from an *Intermec Manual* is displayed below to visualize what has transpired between Loftware and the Intermec printer, that is the conversion of characters from one character set to another. The top row contains various characters in the (Extended) U.S. ASCII character set, while the fourth row contains the French counterpart, or what is displayed upon completion of the first example. On a U.S. keyboard, type the character in the top row, and the corresponding character in the selected character set is printed for the corresponding language.

Intermec Advanced Character Table for Intermec Easy Coder 4400

Country/Language	Character Substitutions											
U.S. ASCII	#	$	@	[	\	]	^	`	{	|	}	~
U.K. ASCII	£	$	@	[	\	]	^	`	{	|	}	¯
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
France	£	$	à	º	ç	§	^	`	é	ù	è	¨
Norway/Denmark	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	¯
Sweden/Finland	#	Ì	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Spain	£	$	§	¡	Ñ	¿	^	`	º	ñ	ç	~
Switzerland	#	$	à	º	ç	é	^	ù	ä	ö	ü	è
Italy	£	$	§	º	ç	é	^	ù	à	ò	è	ì

Note: What you see on your screen in Loftware Design Mode or On-Demand Print is the "\" character, and what is printed when Language is set to France is the "ç".

Figure 6.10: Label Displaying International Characters

Method #3: A Combination Method Using 2 Sets of Charts

Continuing printing scenarios, you could use a combination of Methods #1 and #2. First, enter all the characters you are able to using the IBM ASCII Chart. Then use the second method to enter a different character. However, be aware that you may have problems when combining the two methods.

For example, if the same label is slightly altered, such as the second line in the **From** section is changed to read "shipping@loftware.com". When this line is printed using the Intermec Printer's Advanced Character Table and language in the Loftware's Devices | Options | Language section set to France, the symbol @ is changed to à. See the *Intermec Advanced Character Table* to understand this conversion.

Windows Printers and Laser Jets

International Language options in Printer Setup are not available when using Windows Printers. Since they use TrueType fonts, the IBM ASCII Chart can be used as an option to add characters, as well as inserting the symbols that are available through various fonts. Each font uses a different Char Map.

Note: This same method may also be used for .pas files with the Loftware Print Server.

Related Information
For the extended chart, refer to the *Reference Tables* section of this guide.

Printing Encoded (Single byte) Data, Per-Label Method

When would you use the per-label method?

Suppose you are designing a label that you would like to be able to send to several different countries, and you would like to use the same printer for this label. With the per-label method, you can design the label as a template, and then configure the label in different languages, changing the Character Set for each label to meet the language requirements.

The methods used in this section are quite similar to those used in the Per-Printer section, with some minor differences, as listed below:

1. Create a label in Loftware Design Mode.
2. Press F5, or select File | Media Setup, and then click **Label Options**.
3. Choose the language in which you wish to print under the **Symbol Set** or **Character Set** list.

Using either method, the options are sent to the printer for the label being printed. However, when setting the single byte character set, a check is made to see if a setting in Label Options has been made, and if it has, this setting overrides any value set in the Printer Options.

Getting Character Sets and Fonts (Language Packs)

What are Character Sets? Character sets are collections of characters that include the different glyphs that make up a particular natural (human) language. While the English Character Set has about 200+ glyphs associated with it, natural languages such as Japanese have thousands. So, a Character Set is a human language.

Is a Character Set the same as a Font? No. A Character Set may include several fonts, for example the Asian Character Set Chinese Big 5 has at least four fonts.

In order to print a certain character set, you need to have it on your computer. Most character sets have certain fonts associated with them, as well. In order to print these fonts, you must have this font on your Operating System. To get the appropriate character set and font, complete the following:

Windows XP Professional, Windows Server 2003

Note: You must have your Windows CD in the Computer.

1. Start | Control Panel | Regional and Language Options
2. Under the Languages tab, click Details. Use **Add** to add the input languages you need.
3. Click **OK**.
4. Reboot your computer to enable the new language settings.

Note: Most of the double-byte character set files have fonts with them. If you install a character set, but you have no font on your system to support it, you have to get the appropriate font.
Most fonts are readily found on the Internet.

Enabling a Right-to-Left or Complex Script

When attempting to print in a language that is read and printed right to left, such as Arabic, there are certain files and settings that must be added and/or enabled. Have your OS installation media available before starting the following steps. These files are found and enabled using the operating system installation media.

Windows XP Professional /Windows Server 2003

1. Start | Control Panel | Language and Regional Options
2. Click the **Languages** tab.
3. Check the box Install files for complex script.
4. Click **Apply** and **OK**.

Windows 7

No additional steps, beyond changing the operating system language/keyboard should be necessary to enable right-to-left printing and display.

Printing Vertical Text

To print vertical text, common in Far Eastern languages, fonts are available that support display of text vertically. When installed, these fonts are listed in the font selection dialog prefaced by the @ sign.

For example
@Arial Unicode MS.

Related Information
More information on Vertical Writing and Printing is available on the Microsoft Web site's Global Development section.

Language Properties Wizard

The **Language Properties Wizard** facilitates the creation of both single and double-byte fonts for printing. It allows you to choose a language, font category (Native or TrueType), and a font character on a per-field basis. The Printing Hierarchy with Character Sets discusses printing hierarchy on a Per Printer and Per Label basis. Multiple language fields can be printed on the same label using the wizard. The figure below displays an example warning label with a warning printed in 8 languages, including 3 double-byte character sets. This label is attached to a database that contains the translated text. The advantage of the Language Properties Wizard is that one or several fields on the label may override the Device or Label Options, making it a versatile printing tool.

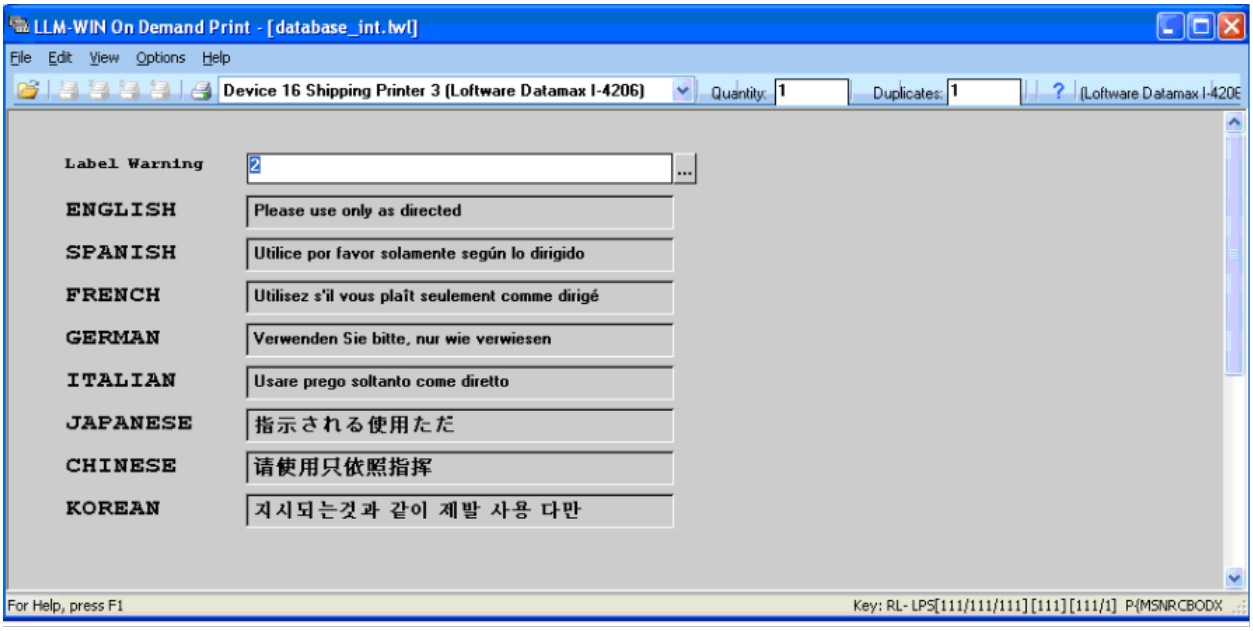


Figure 6.11: On-Demand Print view of a sample label with 8 different character sets attached

Starting the Language Properties Wizard

1. Open a previously designed label, or create a new label in Loftware Design Mode.
2. Click a field on the label to display the **Properties** box for that field.
3. Click anywhere on the **Language Properties** line in the **Properties** box to reveal the browse button (...) then click the browse button (...).

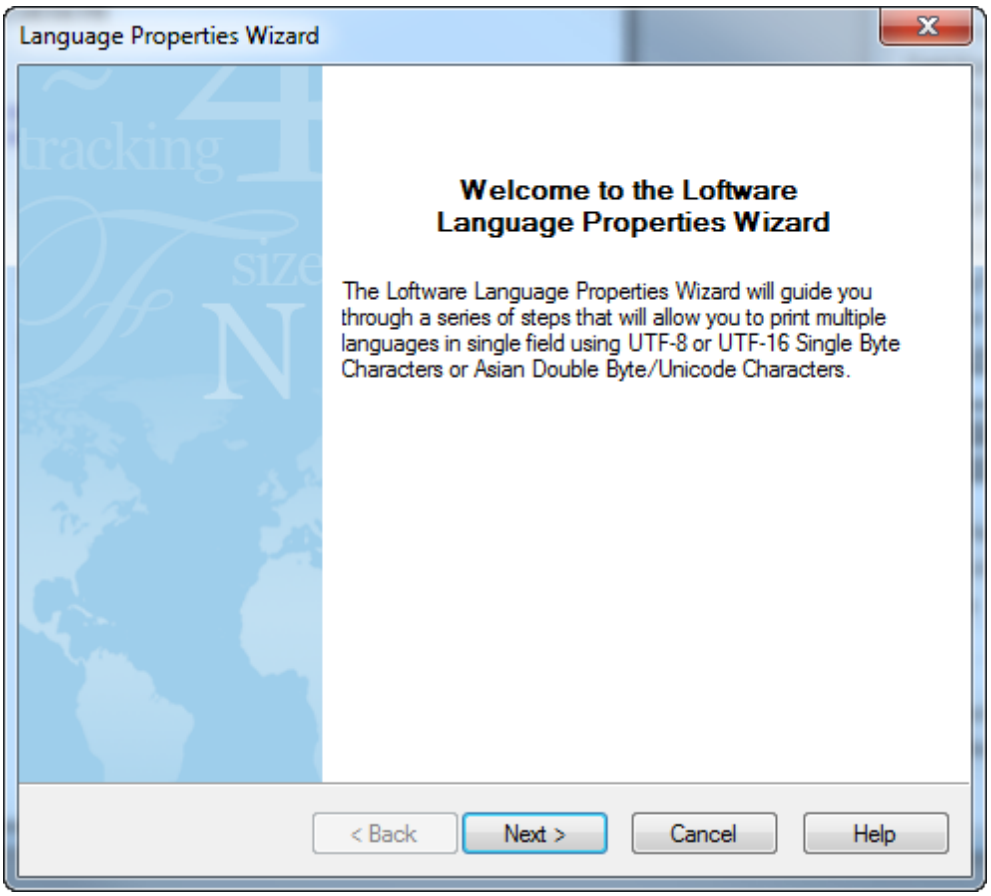

Language Properties Wizard
Welcome to the Loftware
Language Properties Wizard
The Loftware Language Properties Wizard will guide you through a series of steps that will allow you to print multiple languages in single field using UTF-8 or UTF-16 Single Byte Characters or Asian Double Byte/Unicode Characters.
< Back
Next >
Cancel
Help

Figure 6.12: Language Properties Wizard Welcome

4. From the Welcome page of the **Language Properties Wizard**, click **Next**. The Font Language Selection page appears.

Related Information
A flow chart of the **Language Properties Wizard** logic is found in the Reference Tables section.

Font Language Selection

The **Language Properties Wizard** presents different choices depending on which language group that you choose.

Asian (Double-Byte) Language Choice

1. From the **Font Language Selection** dialog, choose the language you wish to print:
   - Non-Asian (Single Byte)
   - Asian (Double Byte).
2. Click **Next**.

Note: Single-byte Character Sets such as Thai and Vietnamese are included in the Non-Asian Section rather than with the Double-byte Character Sets such as Japanese, Korean, and Chinese.

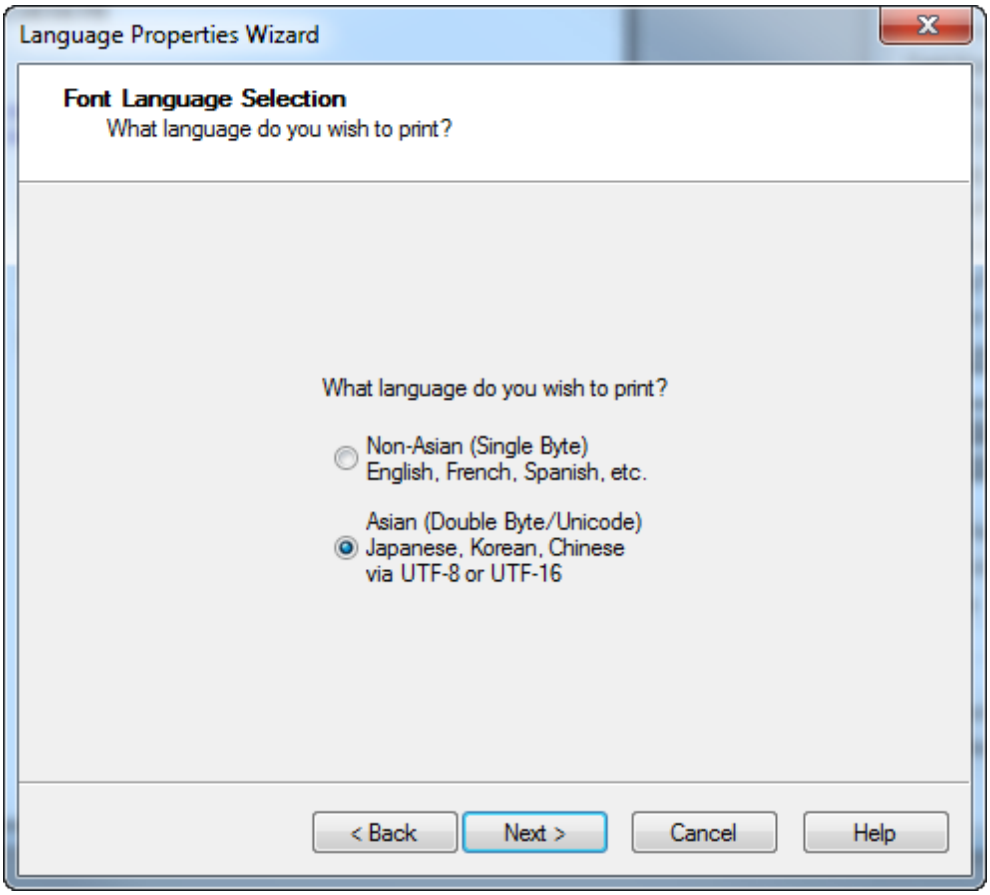


Figure 6.13: Choosing a Non-Asian or Asian (Double Byte)

Font Category Selection

With this choice, one of two dialogs is displayed, depending on whether or not the target printer is capable of printing Asian (double-byte) fonts natively.

If your printer is capable of printing double-byte fonts natively, the following is displayed.

Note: You still may choose to print the double-byte font as a bitmap by clicking **True Type Font**.

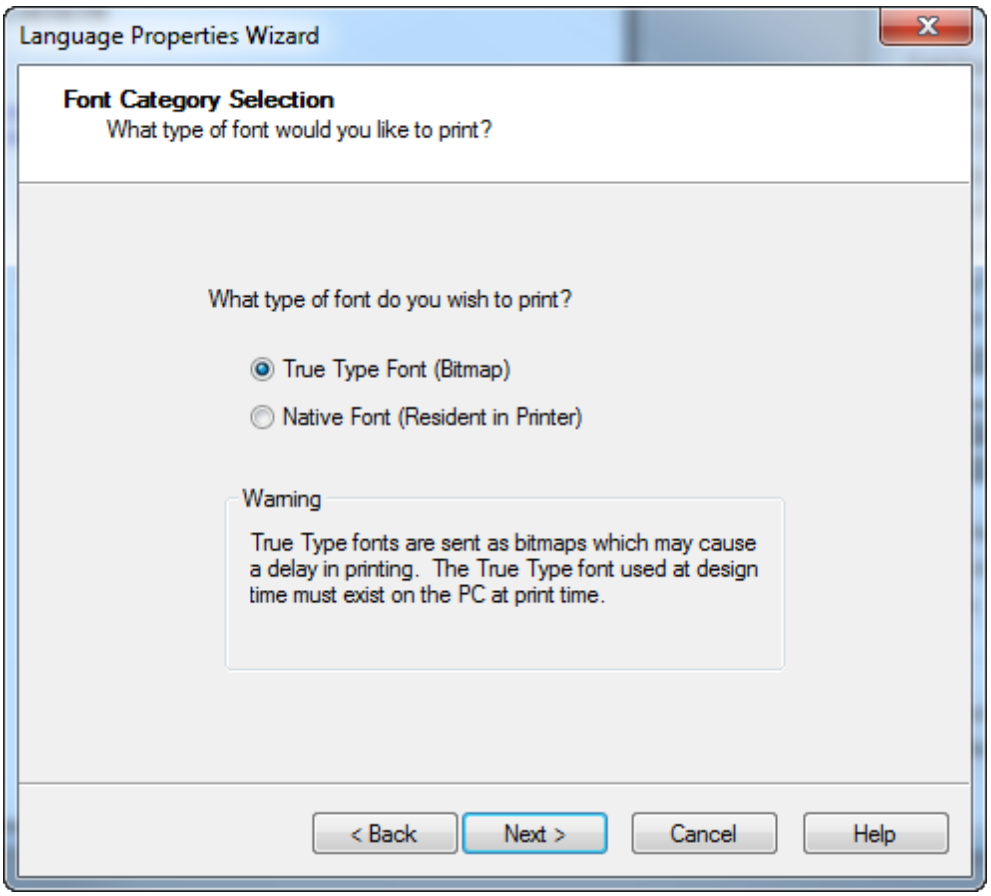

Language Properties Wizard
Font Category Selection
What type of font would you like to print?
What type of font do you wish to print?
True Type Font (Bitmap)
Native Font (Resident in Printer)
Warning
True Type fonts are sent as bitmaps which may cause a delay in printing. The True Type font used at design time must exist on the PC at print time.
< Back
Next >
Cancel
Help

Figure 6.14: Choosing a Native or True-Type Font

- Choose **Native Font** or **True Type Font**, and click **Next**.

If your printer is not capable of printing the double-byte font natively, the following is displayed:

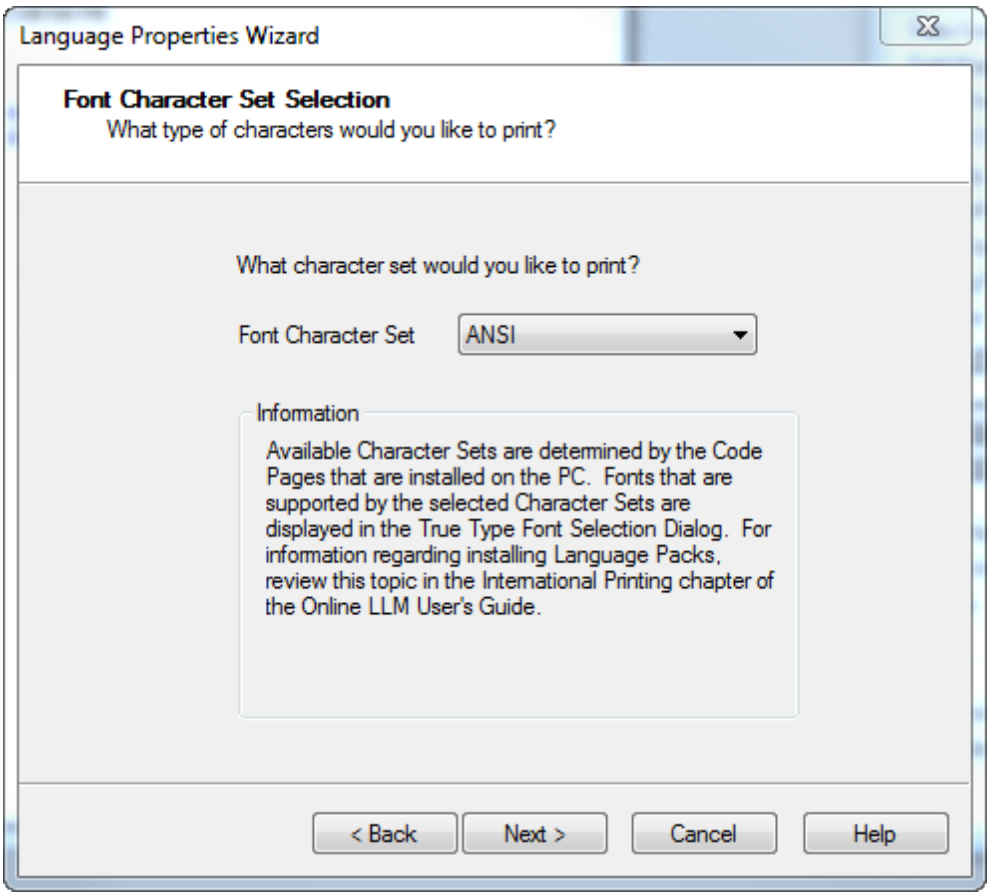

Language Properties Wizard
Font Character Set Selection
What type of characters would you like to print?
What character set would you like to print?
Font Character Set
ANSI
Information
Available Character Sets are determined by the Code Pages that are installed on the PC. Fonts that are supported by the selected Character Sets are displayed in the True Type Font Selection Dialog. For information regarding installing Language Packs, review this topic in the International Printing chapter of the Online LLM User's Guide.
< Back
Next >
Cancel
Help

Figure 6.15: Font Character Set

If the above dialog is displayed, this font (character set) is printed as a TrueType font bitmap. Follow the instructions in the *Printing with TrueType Fonts* section.

Pros and Cons of Native and TrueType Choice

Native Fonts	TrueType Fonts
Choice of font types is limited.	More font choices.
Hardware considerations and configurations necessary.	No hardware considerations or configurations necessary.
Consultation with Printer Manufacturer and Manual involved.	Little if no consultation with Printer Manufacturer or Manual
Printing is faster.	Printing is slower, as TrueType Fonts are sent as bitmaps to printer.

Printing with Native DBCS Printer Fonts

The following page appears if **Asian Language** is chosen, and your target printer is capable of printing double-byte fonts; otherwise, Loftware defaults to TrueType Fonts. Loftware queries the target printer's

driver to determine the capability of the driver.

If you chose **Native Font** in the **Font Category** dialog box, the following dialog is displayed:

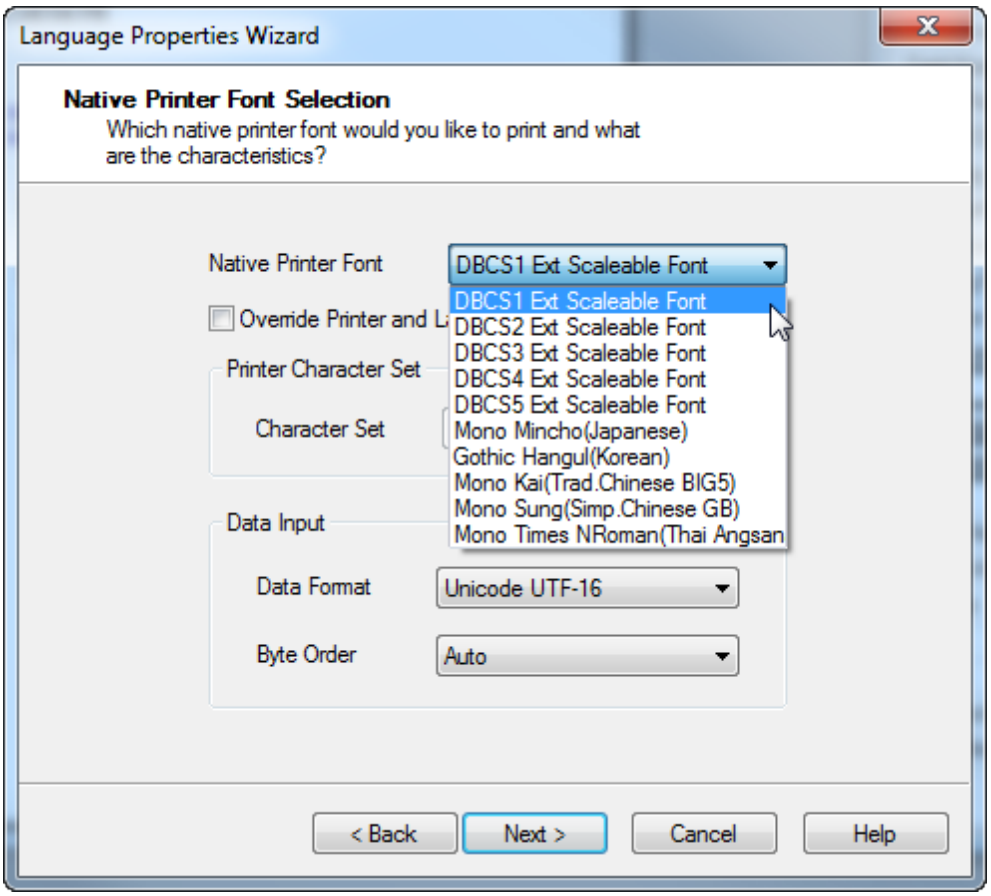


Figure 6.16: Native Printer Font Selection for a Zebra Printer

Native Font Printer Selection

1. Choose the **Native Printer Font** from the drop-down list.
2. Select **Override Printer and Label Character Sets at Field Level** if you want to select a specific Printer Character Set for this field. If the Override box is not selected, **Printer Character Set** remains disabled.
3. Choose the **Data Format and Byte Order**, click **Next**.
4. The **Summary** screen is displayed.
5. Press **Finish** to set this property for the field, **Back** to change the settings, or **Cancel** to close without saving.

Native Font Printer Page Options

Option	Description
Native Printer Font	Choose the type of Native Printer font you want to print. The fonts available in the drop-down list are dependent on the target printer you have chosen.
Override Printer and Label Character Sets at Field Level	Select to set the Language Properties for this field as per field, which overrides any Printer and Label Character Sets.
Character Set	This selection allows you to change the printer character set at the field level, overriding any setting in the PSO or LSO (Printer or Label Options). This list is only enabled when Override is selected. This option only works if your printer supports different character set encodings for any particular DBCS font. **For example** Datamax and Zebra printers can accept Shift JIS, JIS, or Unicode Data for their Japanese Fonts. SATO, UBI, and Printronix can only accept one type of data for any of their fonts, meaning that the font chosen implies the data encoding.
Data Input for Unicode Character Set Section	This section sets the data format and byte order. This gives information on how the data is coming to Loftware; that is, what form it is in.
Data Format	This is the format that you wish to use to send data for the field. ▪ **Single Byte**: In this case, Loftware does not transform the data format, the code page for that character set is used. ▪ **Unicode UTF-16**: Choose this data format if your data is represented in this manner, especially if linking to a Unicode field in a database ▪ **Unicode UTF-8**: 8-bit transformation - use this setting if your data format is set to UTF-8 encoded Unicode.
Byte Order	The byte order by default is **Auto**. When this is set to Auto, Loftware looks for a marker before the data, and interprets the data as Big or Little Endian according to the marker. If you know the specific byte order, you may set this manually as **Big Endian** or **Little Endian**. If you are not sure, leave this setting at the default (Auto), except in the case of database data files, in which case you must specify Big or Little Endian.
Warning Section	This section displays additional information pertinent to the Unicode Data Format.

Printing with TrueType Fonts - Non-Asian (Single-Byte) Language Choice

Font Character Set (Non-Asian)

The following figure displays the drop-down list for Non-Asian characters. This screen is displayed if:

- You chose **Non-Asian Language** on the first page of the wizard.
- Your target printer does not support Native Fonts.

TrueType Fonts are useful if you wish to use different character sets, or if you want to use Unicode Data for a single-byte language such as Greek or Hebrew.

The edit controls (data entry) and input prompts displayed in the On-Demand Print Form (Label Design), the On-Demand Print Application, the On-Demand Print Client, and the Web Client for newly created TrueType font fields inherit the characteristics of the selected TrueType font. Labels containing pre-existing TrueType font fields are not affected unless modified. By default, the applications listed above use the character set based on the system locale. For example, if the system locale is English, the character set that is used is ANSI. Selecting a different character set in the Language Properties Wizard sets that same character set for the input prompt, the edit control and the printed field. If the user desires that specific characters print, it is important to ensure that the characters are supported in a particular font. There are several utilities available that examine a computer for font and character availability, such as CharMap (standard on Windows computers), BabelMap, TTE (TrueType Explorer) and ListFont.

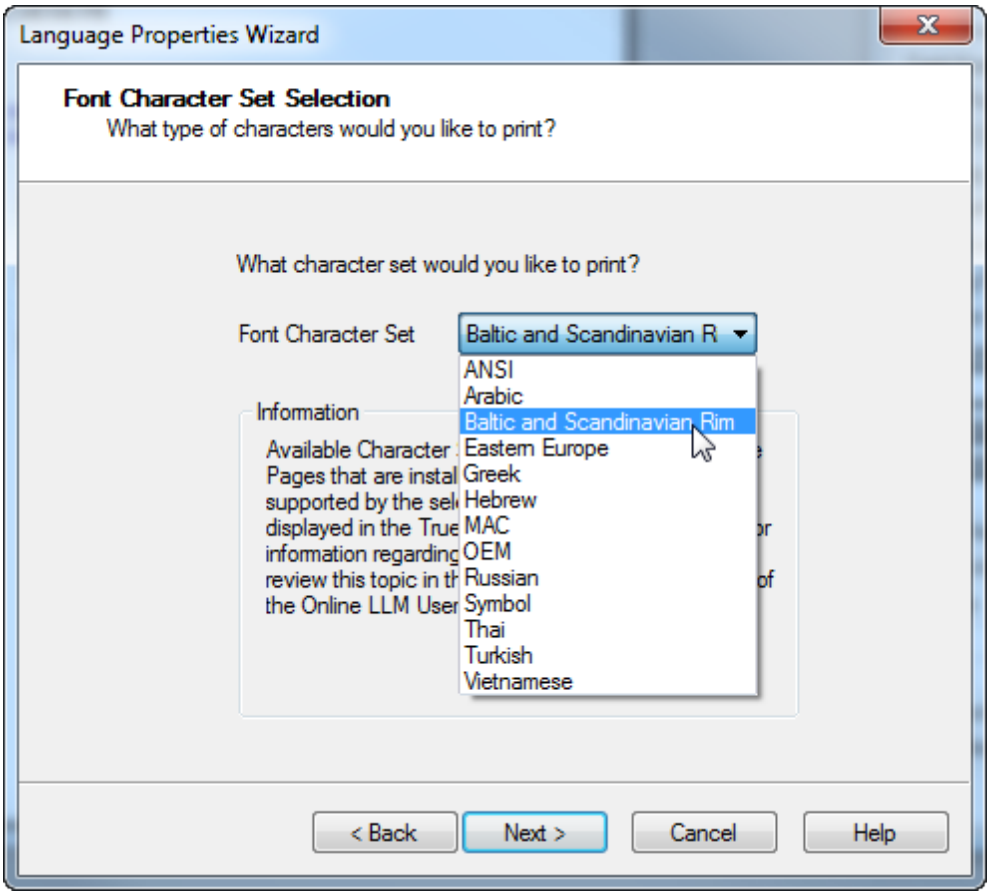


Figure 6.17: Choosing a Single Byte Font Character Set

- Choose the type of character set that you would like to print from the **Font Character Set** list, and click **Next**. If you do not have a font for the selected font character set on your system, an error message is displayed, forcing you to go back and make another choice. Otherwise, the Font Selection dialog is displayed:

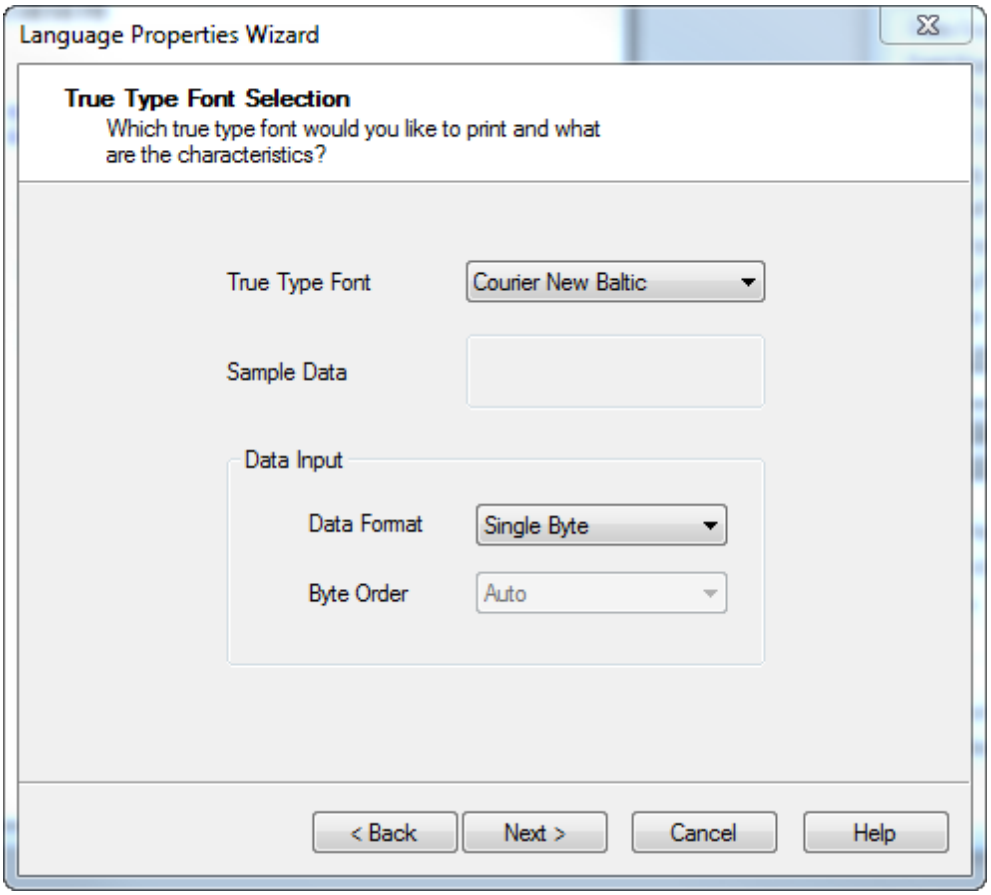


Figure 6.18: Selecting the **True Type font** and **Data Input**

TrueType Font

This list is filtered based on the previous selection, and displays the TrueType fonts that are associated with that character set.

Why is the TrueType Font I want to print not visible in this list?

You must have the font you wish to print installed on your computer. Loftware populates the drop-down list based on a query of your computer, and if an installed font does not support the chosen Character Set, it is not displayed in the list.

Vertical Fonts

The @ symbol preceding some fonts signifies that these fonts print rotated 90º left, for vertical printing. The fonts do not appear rotated in Loftware Label Manager, but they do print vertically.

When creating a field in Design that is utilizing these fonts, you should rotate this field on your label, so an appropriate space is created on the label. This is useful for Asian Fonts that are normally printed in vertical columns, right to left.

The Latin character "H" for a visual example, would look something like: H if rotated.
If this field is not rotated, it prints horizontal.

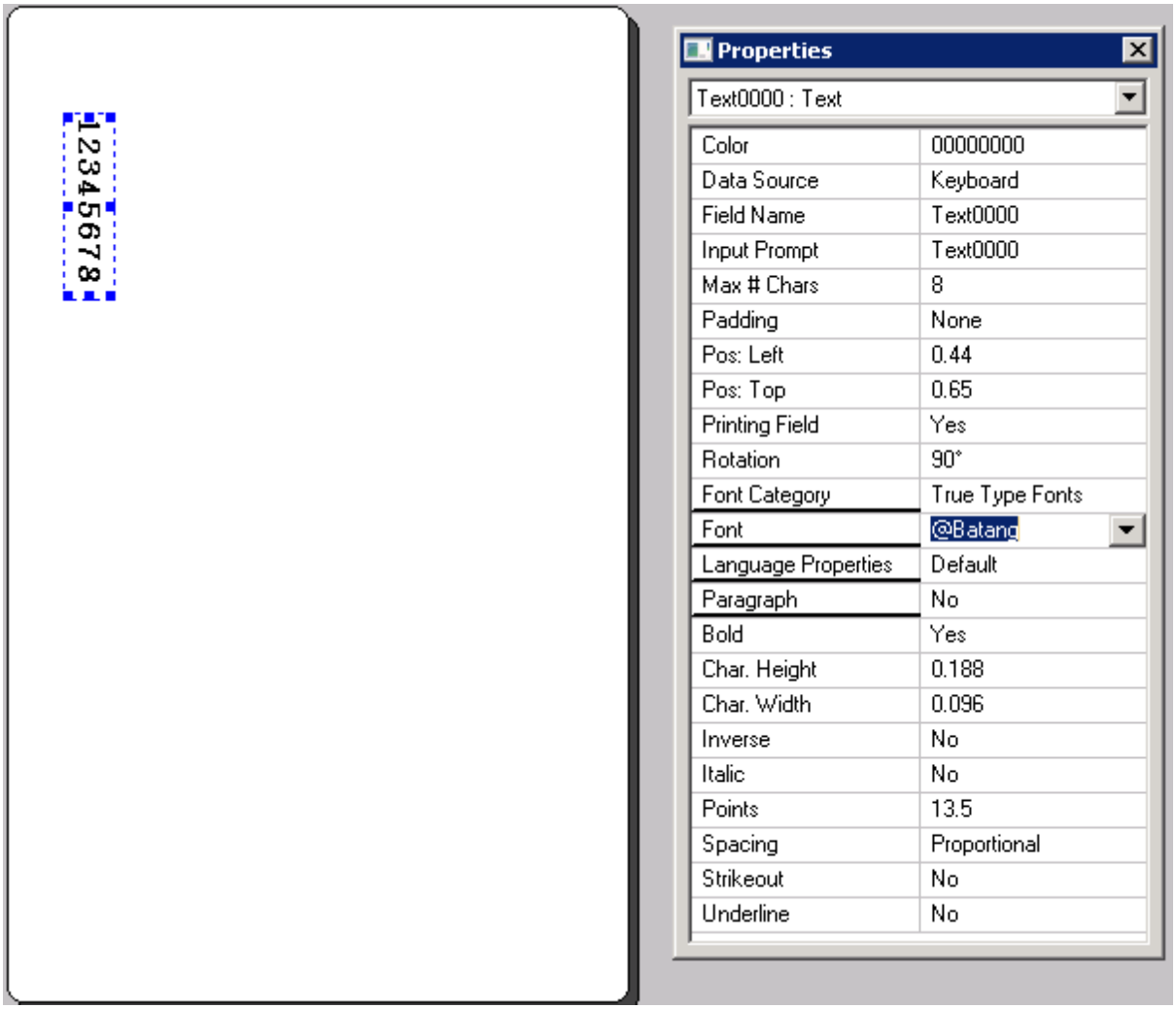


Figure 6.19: Vertical Printing in LLM

Data Input Section

Option	Description
Data Format	This is the format that you wish to use to send data for the field, which is also dependent on whether or not the printer supports Unicode.
Single Byte	In this case, Loftware does not transform the data format, the code page for that character set is used.

Option	Description
Unicode UTF-16	Choose this data format if your data is represented in this manner, especially if linking to a Unicode field in a database.
Unicode UTF-8	8-bit transformation - use this setting if your data format is set to UTF-8 encoded Unicode.
Byte Order	The byte order by default is **Auto**. When this is set to Auto, Loftware looks for a marker before the data, and interprets the data as Big or Little Endian according to the marker. If you know the specific byte order, you may set this manually as **Big Endian** or **Little Endian**. If you are not sure, leave this setting at the default (Auto), except in the case of UTF-16 database data files, in which case you must specify Big or Little Endian.

Note: Some programs such as Microsoft Access© encode the data as Unicode (UTF-16) but they may need to be re-encoded as UTF-8 using the Language Properties Wizard in Loftware in order to print.

- Click **Next** when finished with your choices. A summary of the Language Properties for the field is displayed:

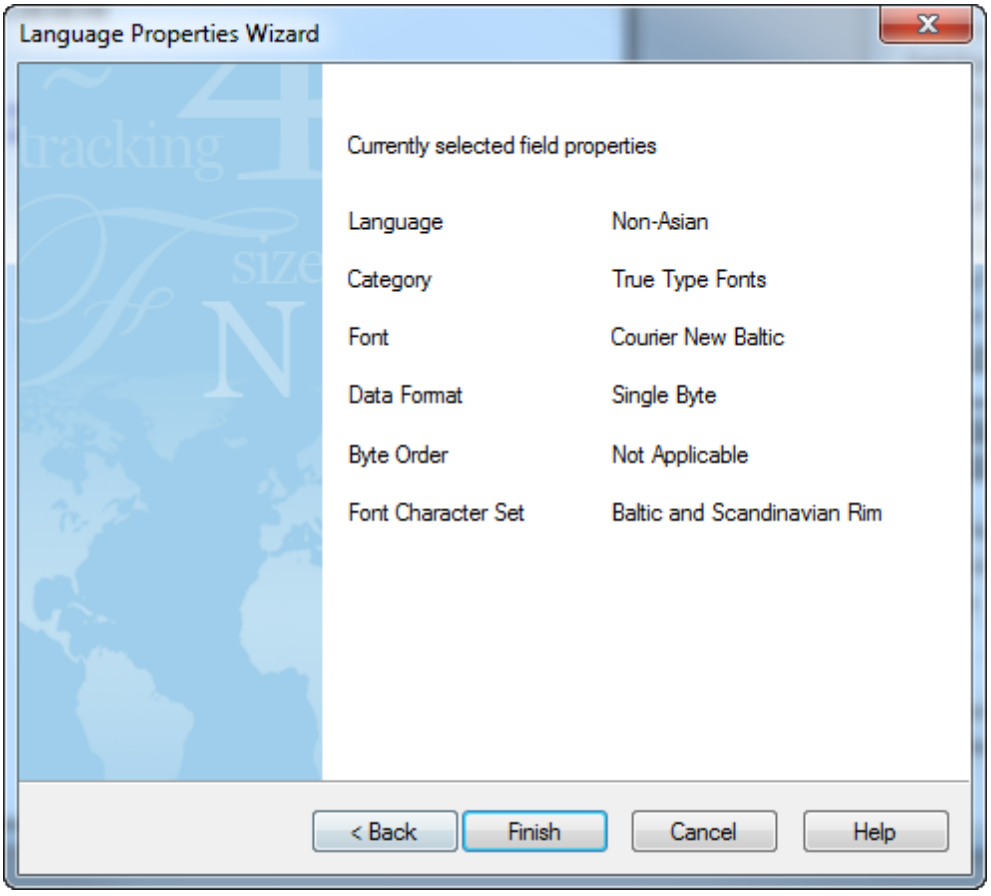


Figure 6.20: Summary Screen displaying the chosen Field Properties

- Click **Finish** to set this field's properties, **Back** to change properties, or **Cancel** to revert to the default properties.

Changing or Resetting the Override Field

Once a field's language properties have been set to override the Printer and Label Options, you have choices in terms of changing this setting, or changing the language properties of the field.

Reset Default Field Properties

1. Click the field in Loftware Label Manager, and then click the browse button (...) on the **Language Properties** line of the **Properties** box.
2. The **Summary** screen is displayed with an added button at the bottom called **Reset Defaults**.
3. Click **Reset Defaults** and the field override setting of this field changes to **Default**. This is the default setting for the Printer or Label. This field is now set as if the Language Properties Wizard had not been used; however, the font choice remains the same.

Reset Font or Category

1. Changing the **Font Category** or the **Font** in the **Properties** box for a field override field sets the Language Property for this field back to **Default**.
2. Double-clicking in the **Font** or **Language** Property line in the **Properties** box opens the **Language Properties Wizard**.

Change Language Properties

1. Click the field in Loftware Label Manager, and the browse button (...) in the **Language Properties** line of the **Properties** box.
2. The **Summary** screen of the currently selected field properties is displayed.
3. Click **Next** to change the previous settings, such as a change from Native to TrueType font, or a change in the Character Set or the font.

Considerations when Printing with Native Fonts

Each Printer Family (and Printer Models within that family) has different requirements for International printing; therefore, you have to do your homework in advance to define what it is you want to do, and what your printers support. As a start, ask yourself and/or your Printer Manufacturer the following regarding printing in an international language:

- Is there a special card or module required?
- Is a special firmware build required?
- What are the memory requirements?
- Are code tables included in your printer, or do they need to be purchased or downloaded separately?

- Are the fonts you want to use included, or do you need to download them to the printer?
- Does your printer allow setting the Character Set natively on a per-field basis?

Printers and Double Byte Font Support

Loftware has developed our international printing capabilities to encompass all of our supported Device Families and Models, either natively, or with TrueType fonts sent to the printer as bitmaps.

Native Font Support

Datamax

Datamax supports scalable resident DBCS fonts in printers that support their International Language Print Capability (ILPC).

- Supported Printer Models:
  I-4206, I-4212, I-4308, I-4406, I-4604, E-4203, E-4304, W-6208, W-6308, and W-8306.
- Fonts Added to the Properties Box:
  Scaleable Japanese, Gothic B and E Kanji, Scalable GB, BIG5 Traditional Chinese.
- Supported Encodings:
  EUC, JIS, ShiftJIS, Unicode, GB, BIG5

Intermec-UBI

Fonts may be downloaded to the printer memory, or may be added through PCMCIA cards.

- Supported Printer Models:
  Easy Coder 201, 301, 401, 501, 601, 501XP, 601XP, E4, F4.
- Fonts Added to the Properties Box:
  HonMincho Light (Japanese, SHIFT JIS Encoding)
  DLC Ming Medium (Traditional Chinese, BIG5 Encoding)
  Ming Cho Medium (Korean)
- Supported Encodings:
  Multiple encodings per font are not supported at this time.

Printronix

Double byte support in Printronix printers requires special printer firmware. Four different models may be ordered:

- Hangul (KSC code table for Korean).
- HanziGB (GB code table used in People's Republic of China).
- HanziBig5 (Traditional Chinese Hanzi used in Taiwan and Hong Kong.)
- JAP, supports Shift-JIS for Kanji character used in Japan.

When ordered, each of these firmware packages includes a default DBCS font.

- Supported Printers in Loftware: Printronix 5204, 5206, 5208, 5304, 5306, 5308, IBM_4400-004 (203 dpi) IBM_4400-004 (300 dpi), IBM_4400-006 (203 dpi), IBM_4400-006 (300 dpi), IBM_4400-008 (203 dpi), IBM_4400-008 (300 dpi).

Note: IBM Printers are OEM Printronix.

- Fonts Added to the Properties Box: "TwoByte" – This font selection is used for all of the DBCS settings. The printer includes the DBCS Font itself; there is no ability or need to differentiate between them in Design Mode.
- PSO DBCS Option – This allows you the ability to set a default double-byte character set for use ONLY in "test print" mode in Loftware Design. LLM Design generates appropriate test print data for the printer firmware you are using.

Note: Loftware does not convert the data from UTF-8 to DBCS at this time.

SATO

The following fonts have been added to the SATO driver for Loftware:

- Kanji 16x16 dot, JIS data
- Kanji 24x24 dot, JIS data
- Kanji 16x16 dot, Shift-JIS data
- Kanji 24x24 dot, Shift-JIS data

These fonts are bitmapped, meaning that representative glyphs reside in the SATO printer and may be selected as you would select any other font in the Properties box. Remember to enable the use of DBCS under Options | Preferences in Loftware Design mode.

Since SATO only supports the previously mentioned double-byte fonts, they may be chosen under the fonts section rather than in Device Specific Options.

Note: The choice of JIS and Shift-JIS is included in the font (rather than on the PSO/LSO) because Japanese is the only DBCS language SATO supports, and only JIS and Shift-JIS are supported. When one of these fonts is selected, the Language Properties Wizard opens. Also, the SATO driver does not currently use the "character set" option from the PSO at all, as the other printers do.

Note: The SATO manual also lists a 22x22 Kanji JIS font, but in testing with a CL408e this does not work so it has not been enabled through Loftware.

Hardware

The SATO fonts are supplied on a small printed-circuit board (PCB) containing an EPROM chip. This PCB is swapped for one already in the printer.

Other Properties

- Bold - Bold property may be set YES/NO. (The SATO manual refers to this as "emphasis.")
- Spacing - Spacing property may be set to "Smoothing" or "Non-Smoothing."

The following SATO printers have the Kanji fonts available in Loftware:

SATO_CL408, SATO_CL408E, SATO_CL412, SATO_CL412E, SATO_CL608, SATO_CL608E, SATO_CL612, SATO_CL612E, SATO_M5900E, SATO_M8400RVE, SATO_M8459SE, SATO_M8460SE, SATO_M8485SE, SATO_M8490SE.

Zebra

Zebra supports a number of DBCS fonts, via several media. Loftware has focused on those Printer Models that support PCMCIA Cards, primarily the XiII and XiIII models, as well as Z4M and Z6M.

- Printer Configuration and Label Options dialogs:
- Default Single byte Symbol (Character) Set
  The default single byte character set on a per-printer or a per-label basis as described earlier. There is a Japanese single byte Character Set that should not be confused with the Japanese double byte character sets.
- Supported Encodings
  Japanese – JIS, Shift JIS, Unicode, EUC
  Chinese – GB, BIG5, Unicode
  Thai – Angsana
  Korean – Hangul, Wansung, Johab, Unicode
- Fonts Added to the Properties Box: The following DBCS fonts have been added to the properties box for supported Zebra printers:
  - Monotype Mincho (Japanese)
  - Gothic Hangul (Korean)
  - Monotype Kai (Traditional Chinese BIG 5 encoding)
  - Monotype Sung (Simplified Chinese, BIG5 encoding)
  - Monotype Times New Roman (Thai Angsana encoding)

Creating a Double-Byte File in Microsoft Word

The following information is designed to give you a high-level overview at how you can create a double byte database data source and database file source using Microsoft Word. A file needs to be created as an input to the DBCS field on the label. The field may ONLY be created as Database-Data, File Data Source, or Database-File. A keyboard source cannot add the double-byte font correctly. The method used below is only one way to create this file.

Step 1 – Install the Global Input Method Editor (IME)

1. Click Start | Control Panel, select Regional and Language Options.
2. Under the Languages tab, click **Details**.
3. Under the Settings tab, click **Add**. Select the Input language for the double byte language you wish to use. Select the Keyboard layout/IME. Click **OK**. The added Input language should now be listed.

4. Click **Apply**. If you wish to change Preference settings, use the Language Bar and the **Key Settings** buttons. Language Bar preferences include showing additional language bar icons on the taskbar.
5. Click **OK**.

Step 2 – Entering characters from the Symbol List

1. Choose the language from the systray (for this example, Japanese), and a floating keyboard is displayed.
2. Click the down arrow next to the "Soft Keyboard" text.
3. Select **Symbol List** from drop-down menu.
4. Click the down arrow under the **Symbol List** heading, change symbol to **Shift JIS**.
5. Select the proper font for your printer, in this case, **Kanji 1**.
6. Open Microsoft Word.
7. Select the symbol(s) you need to print on your label from the floating keyboard.

The symbols are displayed in the Word Document.

Step 3 - Saving the Symbol File

1. Click **Enter** on the Input Method Editor. The symbols/characters are visible, but are not saved to the Word document prior to clicking **Enter**.
2. Change your input type back to English using the icon in the systray.
3. Save the file with Save as Type set to Encoded Text (*.txt). When you click Save, you are prompted with the message "Styles, pictures and other formatting cannot be saved in an Encoded Text file, do you want to save name of file.txt anyway?"
4. Click **OK**.

The file is now saved in the encoded txt format and can no longer be opened nor viewed in Word, but it does have the correct raw data to be sent to the printer in Shift-JIS format.

Related Information
For more information on Data Sources, refer to the Data Sources section of this guide.

Creating DBCS Font Fields using a Database or Files

It is also possible to add double-byte fonts to your label by sending the data for the field using Data Source in the Loftware **Properties** box.

Data Sources

Adding a DBCS font field with data sources is very similar to using any database or file datasource with Loftware.

Note: Asian Characters are not displayed in Design View at this time, but are printed. ASCII characters are displayed in the Design View.

1. Open a label in Design Mode, click a field to select it.
2. Set the data source for the field to Database-Data, Database-File, or File in Data Sources.

The data source must contain the double-byte encoded data (GB, BIG5, JIS, Unicode).

Note: You MUST select a byte order for data sources. See the Language Properties Wizard for information on how to do this.

For example:

1. Click **File** in Data Sources.
2. Browse to the directory that contains the Encoded Text, and select it.

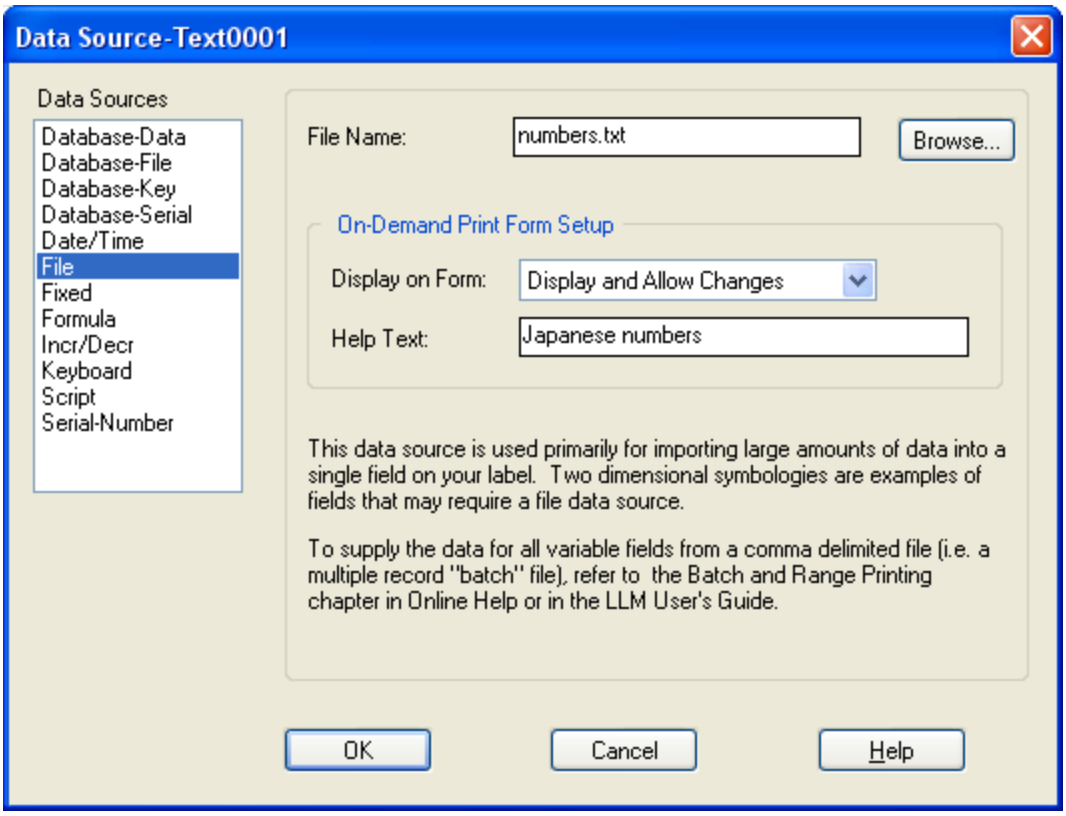

Data Source-Text0001
Data Sources
Database-Data
Database-File
Database-Key
Database-Serial
Date/Time
File
Fixed
Formula
Incr/Decr
Keyboard
Script
Serial-Number
File Name:
numbers.txt
Browse...
On-Demand Print Form Setup
Display on Form:
Display and Allow Changes
Help Text:
Japanese numbers
This data source is used primarily for importing large amounts of data into a single field on your label. Two dimensional symbologies are examples of fields that may require a file data source.
To supply the data for all variable fields from a comma delimited file (i.e. a multiple record "batch" file), refer to the Batch and Range Printing chapter in Online Help or in the LLM User's Guide.
OK
Cancel
Help

Figure 6.21: Adding the File Data Source

3. Click **OK**.

When the file (or data source) is sent to the printer, it is displayed exactly as it was created.

Database File Data Source

Note: Read the Data Sources section for more information on Database File Data Sources.

The Database-File Data Source is used to connect a field on a label with a field in the database, similar to the Database-Data datasource. The difference is that the Database-File assumes that the matching database field contains the name of a file that contains the data for the field.

Example

A manufacturer of time-dated materials might have several message labels in different languages. Rather than repeating this information for every product in the database, the user could create a set of Message Label text files in different encoded data and tell Loftware Label Manager to use the database to look up and retrieve an appropriate file in response to a number or code entered by the user. That is, the database file may be named korean.txt or spanish.txt, and contain different encodings appropriate for the country to which the label is sent.

The Database-File setup dialog defines the connection to the database.

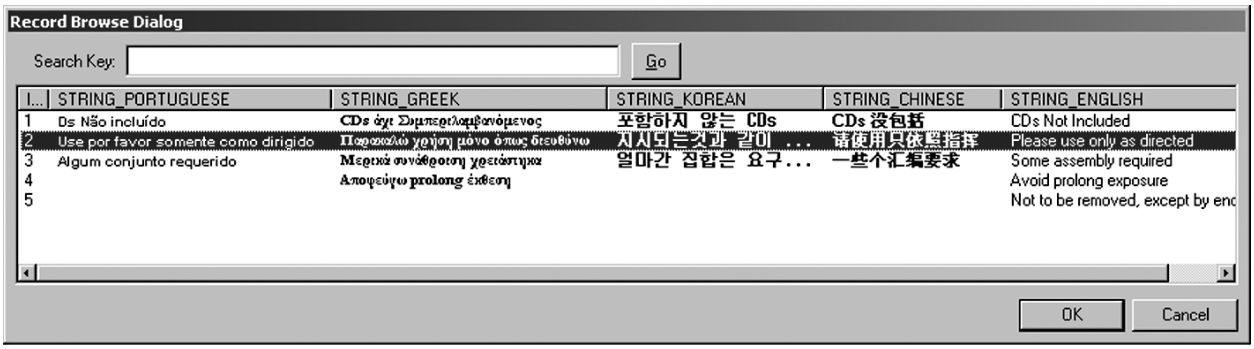


Figure 6.22: Database Browse Screen for a Unicode Database

Related Information

For more information on database connections refer to the *Data Sources* section in this guide.

Unicode Input Methods with the Loftware Print Server

The following sections are only for use with the Loftware Print Server.

Method 1 – ODBC Linked Label

Most production printing companies have databases with Unicode data that can be linked to a label and printed in that manner. In this case, Loftware simply gets the data as it is, and prints it.

Note: The data format MUST be set to UTF-16 in the Language Wizard for Unicode fields to be displayed in the field selection dialog.

Method 2 – Unicode with ActiveX Client Control

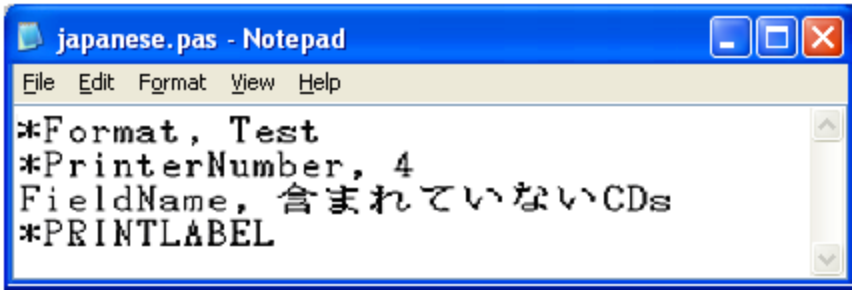
Loftware's ActiveX Client Control accepts Unicode data (UTF-16). In the second part of the Set Data Command, actual data is inserted, and can be printed by Loftware.

Method 3 – Pas file with Unicode UTF-8 Encoding

There is a way to create a test file whereby your Unicode UTF-16 data is converted to UTF-8 for printing by Loftware. Keep in mind that the following example is not recommended in a production environment, but is included here to give you an example of how to create a pas file that expresses the data in an ASCII-compliant format, thereby allowing representation of double-byte fonts as TrueType bitmaps.

How to create a .pas file with UTF-8 Encoding

1. Open a text editor such as Notepad on your computer.
2. Type in the beginning of a .pas file.
3. Copy data from your database.
4. Paste the data into the file, after FieldName.



Using Notepad to create the sample .pas file

5. Click File | Save As. Enter a File name.
6. Select text from **Save as type**, and UTF-8 from **Encoding**

If the characters are not displaying correctly, verify that you are using the correct font in your text editor. Japanese characters, for example, might display using MS Gothic or MS Mincho.

Method 4 – Pas file with File Source

A .pas file option, DELINKFILESRC, allows the file name for a file data source to be specified in a .pas file. The default action for a field with a file data source is to use the file name saved with the label, but this command allows the file name to be overridden in the PAS file, in other words, to be delinked from the field.

To use DELINKFILESRC

- Include command "*DELINKFILESRC" in the .PAS file (see example).
- Specify the data file for a field by the command: fieldname, dataFileName.

Note: In this case, the Database File Field has a File datasource!

Example

.PAS File with DELINKFILESRC

Commands and Field Specifiers	Explanation
*FORMAT,fileSrc_zeb_KOR_3ENC.lwl	
*JOBNAME,zeb_korean1	
*QUANTITY,1	
*PRINTERNUMBER,22	
*DELINKFILESRC	Allow the file name for a file data source to be specified in the PAS file.
Company, Loftware	Data for the field "Company" is "Loftware"
FILEFIELD1,comment1.txt	Data file for the field "FILEFIELD1" is "comment1.txt"
FILEFIELD_DBCS1,dbcs_korHangul_cmn1.dat	Data file for the field "FILEFIELD_DBCS1" is "dbcs_korHangul.dat"
*PRINTLABEL	Print the label

Note: In this example, the Korean data file was given a .dat extension to distinguish it from the ASCII text files with .txt extensions, but this is not required.

Related Information

For more information on Pass files, refer to the *Loftware Print Server User's Guide*.
For more information on Data Sources, refer to the Data Sources section of this guide.

Troubleshooting Font Fields

International Printing can be very valuable in expanding your shipping capabilities. If you encounter problems, check the following:

- If you are trying to print double-byte fonts natively, make sure that you have read information regarding how your printer stores double byte fonts and that you have the appropriate firmware, PCMCIA card or module to print the characters you need. Loftware does not support any Printer Firmware issues.
- Check Printer Options and Label Options to ensure that the correct language has been chosen in Loftware.
- Go through the steps for the Language Properties Wizard a few times to thoroughly understand how the wizard works.

Note: The paragraph feature in Loftware Label Manager (Design) was designed for single-byte character sets, and as currently implemented, does not work consistently with the double-byte data used for DBCS fonts.

In some cases, doubling the size of the paragraph fields on your label may work, if the data is consistently double-byte. However, many "double-byte character sets" may have both single-byte and double-byte characters, as listed below:

Japanese Shift-JIS(MS Code page 932)
Simplified Chinese GBK MS code page 936)
Korean Hangul(MS code page 949)
Traditional Chinese BIG5(MS code page 950)

A printer manufacturer may support these in slightly different ways, so it is best to review the actual code pages from that manufacturer.

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This section describes Loftware's pre-designed label templates used to create production printing labels in less time and with less potential errors. It provides guidance to users who routinely produce customized labels for production printing - unique labels with barcode, text, lines, boxes and graphics. This section also contains information on creating custom templates.

Loftware has many templates to choose from, including a template for the 1724-A label for General Motors Suppliers, as well as a wizard that creates the complex PDF-417 barcode that accompanies this label. This section explains how to customize your labels, how to open a template, and how to use some of Loftware's Wizards, specifically the GS1 Barcode, the General Motors (GM), the GS1 Code 128, and the UPN Healthcare Barcode Wizards. The wizards help you to create a custom formula that becomes a part of the barcode, helping you to comply with labeling standards the world over, as well as saving you time and effort. Using a template and a wizard together makes production label printing a far easier task than it has ever been.

The following is the default directory for Templates created during a new installation:

<Program Files Folder>\Loftware Labeling\TEMPLATE\GENERAL.

What is a Template?

A label template is a "master" copy for labels of a certain type. A template can include the boilerplate fields you want to be displayed in each label of that type. You can select from the templates provided with Loftware Label Manager or design your own.

Creating a New Label based on a Template

When you select a template from the label template selection dialog of the New Media Wizard, a thumbnail preview of the label template and a description are shown.

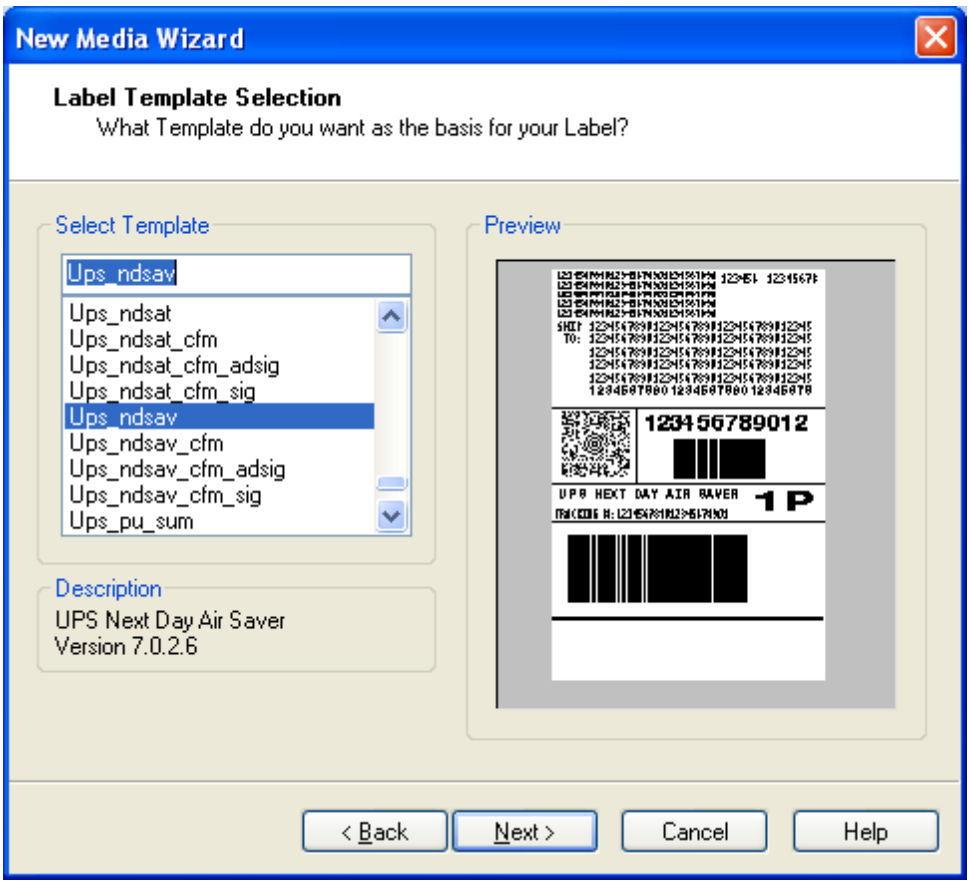


Figure 7.1: New Label Wizard dialog box displaying a thumbnail preview of UPS Template

If you select the normal (default) template, Loftware Label Manager displays the default label size (4x6); otherwise, the size stored in the template is used. With other templates, such as the Kmart or JCPenney template, you need to adjust the format and field data sources to fit your particular application.

Note: Not finding the Template you are looking for? Be sure that the correct path to the Templates has been chosen by selecting Options | File Locations, and verifying that the path to Templates is correct.

Creating Your Own Template

The compliance templates that ship with the Loftware Label Manager system are saved in the label designer as templates, with a .lwt extension. To make your own template, you may do one of two things:

1. Open a template in LLM design mode.
2. Select **File** | **Save As**.
3. Save the label with a .lwt extension in the \Template folder.
4. Change the label to fit the requirements desired, save the label again, but this time with an .lwl extension.

or

1. Design a new label in Loftware design mode.
2. Save the label, choosing the template option in the **Save File As Type** combo box.
3. Change the label as needed in design mode.

Note: You may have to change the extension of the label from lwl to lwt manually.

The template is available as a useful starting point the next time the File | New is selected; however, it is necessary to save the template as a label, using the .lwl extension

Related Information
For information on using the New Media Wizard to create a new label based on a compliance template, refer to the *Using an Industry-Specific Label Template* in this guide.

Barcode Wizards

A barcode wizard is a program that builds a barcode based on a particular specification, and includes a list of the symbologies available for that specification. Using a wizard, you can build the barcode step by step by choosing which components to add as you respond to each dialog box presented to you.

The next sections describe three of the barcode wizards available in Loftware Label Manager, the GM Wizard, the GS1 Code 128 and the UPN Wizard. By following this tutorial, see how the wizard helps you to:

- Set the barcode values
- Direct the creation of non-printing fields
- Enter the necessary data for the components of the specification

GS1 DATABAR and GS1-128 Wizards

Loftware's GS1 Barcode Wizard can guide you through step-by-step creation of the formula for the data carrier. When a data carrier is chosen, the wizard knows which element strings are available for that data carrier, which helps to guard against entering incorrect data and helps you build the correct data structure.

It may be helpful to review the GS1 at http://www.gs1us.org before using the wizard to understand when and where different symbologies or data carriers are used.

GS1 Wizard, Part 1 – Choose a Data Carrier

1. Select Insert | Barcode Wizard in Loftware Label Manger Design.

Note: The Barcode Wizard is not available for RFID tags.

2. From the **Barcode Wizard Selection** page, expand the list of wizards by clicking the + symbol to open the tree view.

The following choices are displayed.

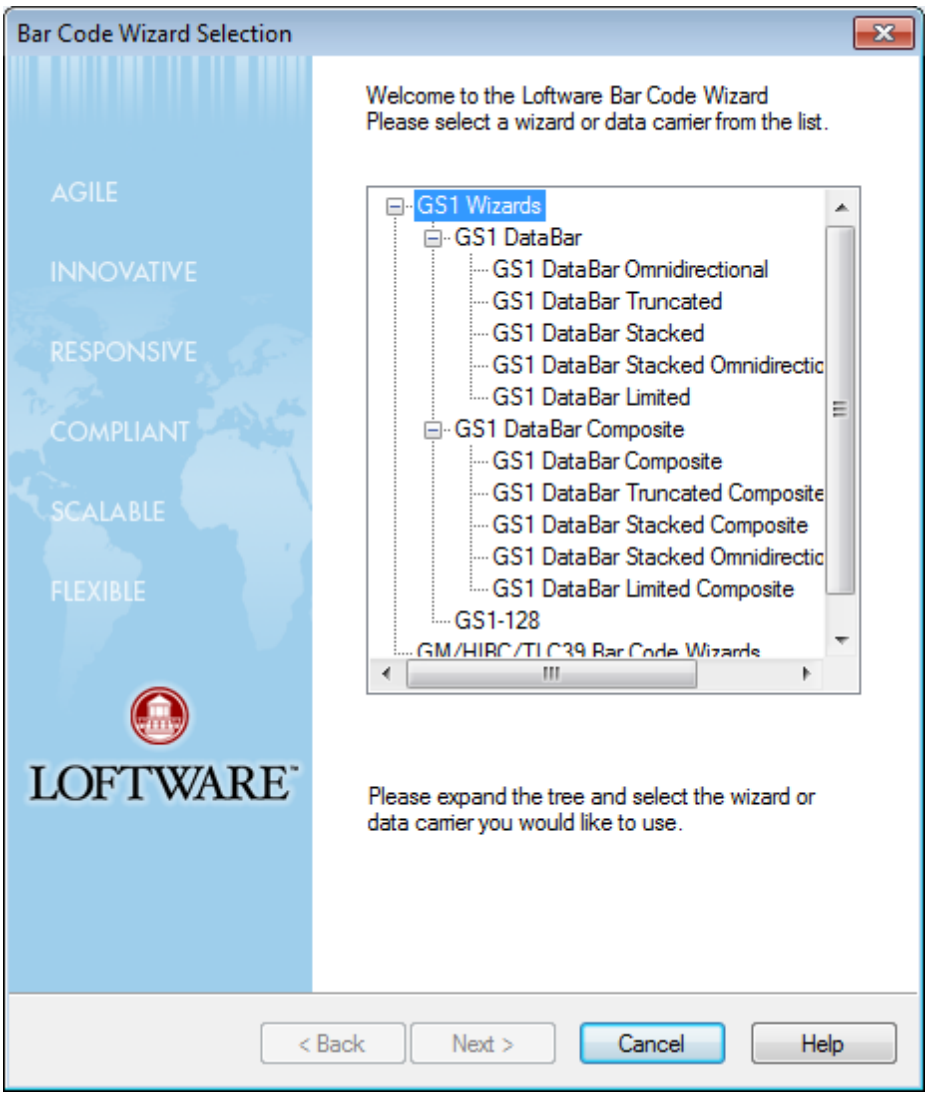


Figure 7.2: Barcode Wizard Selection

3. Select a Data Carrier or Wizard from the expanded list, and then click **Next**.

A preview at the bottom of the list displays a graphical representation of the selected Barcode.

The Element String Selection page appears.

GS1 Wizard, Part 2 – Element String Selection

Once the Wizard is selected, the possible Element Strings that can be encoded in the chosen Wizard (data carrier) appear. Some of the Element Strings have specific formats with an example of the format displayed to the right of the data carrier. In some instances, certain element strings are required, and are automatically added to the element string list for that data carrier, as well as to the formula. In addition, if the chosen data carrier is a composite symbology, a Composite Delimiter is added to the formula. An example of a required element string and a composite delimiter that divides a linear and a 2-D

symbology is displayed in the following figure. (The 2-D portion of the formula has not been added yet)

Field Name

A default Field Name is assigned. This name can be changed. If the label to which you are adding the barcode uses LST files a drop-down list is displayed from which the field name may be chosen.

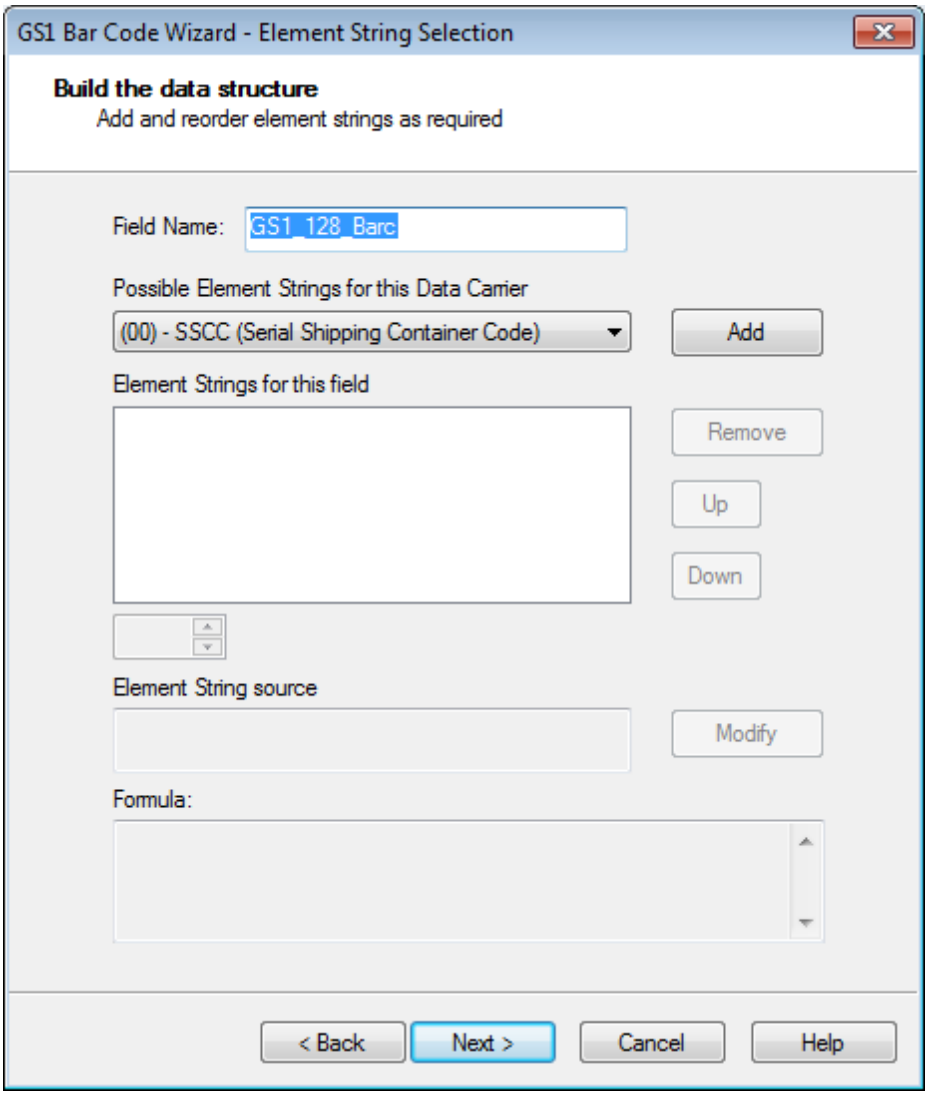


Figure 7.3: Element String Selection

Element Strings – Availability

The list of possible element strings is dependent upon the chosen data carrier. An example of possible choices for the previously chosen barcode follows.

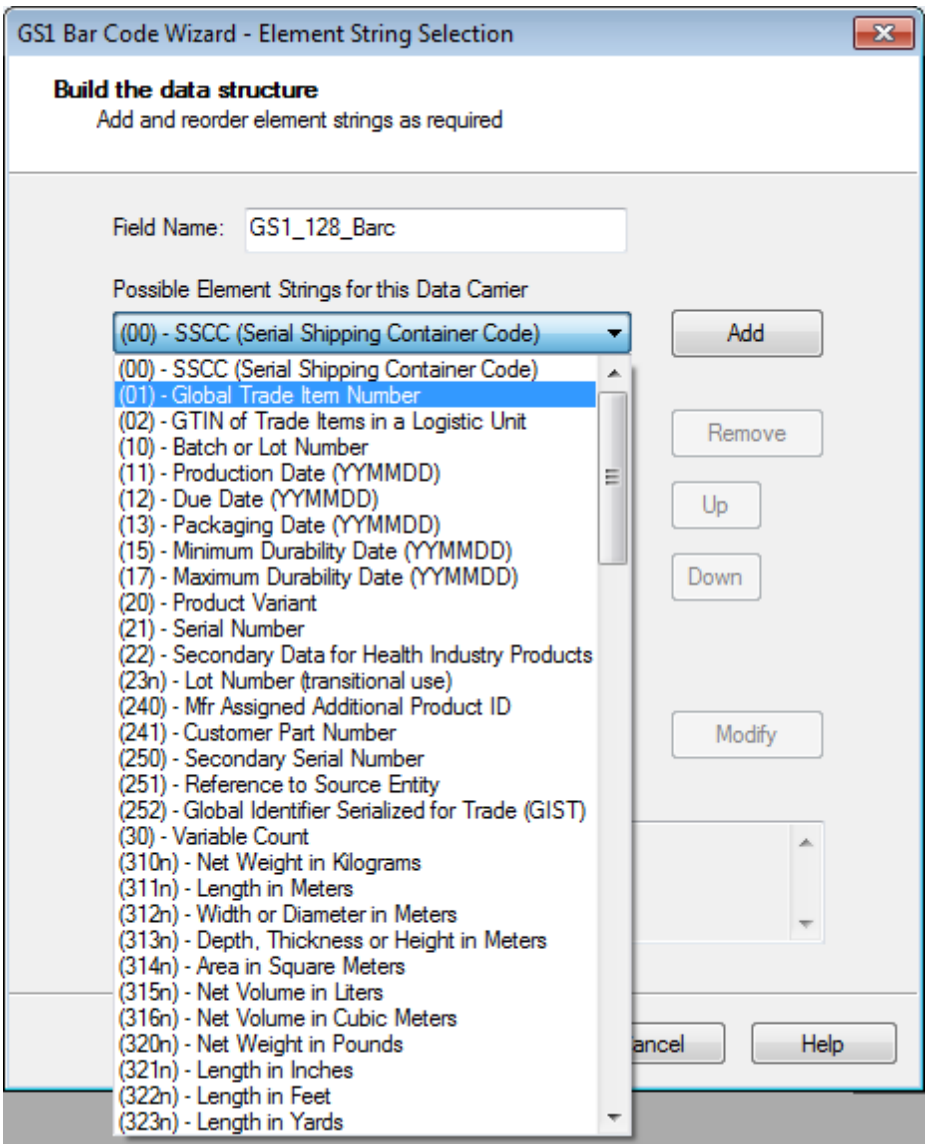

GS1 Bar Code Wizard - Element String Selection
Build the data structure
Add and reorder element strings as required
Field Name:
GS1_128_Barc
Possible Element Strings for this Data Carrier
(00) - SSCC (Serial Shipping Container Code)
Add
Remove
Up
Down
Modify
Help
(00) - SSCC (Serial Shipping Container Code)
(01) - Global Trade Item Number
(02) - GTIN of Trade Items in a Logistic Unit
(10) - Batch or Lot Number
(11) - Production Date (YYMMDD)
(12) - Due Date (YYMMDD)
(13) - Packaging Date (YYMMDD)
(15) - Minimum Durability Date (YYMMDD)
(17) - Maximum Durability Date (YYMMDD)
(20) - Product Variant
(21) - Serial Number
(22) - Secondary Data for Health Industry Products
(23n) - Lot Number (transitional use)
(240) - Mfr Assigned Additional Product ID
(241) - Customer Part Number
(250) - Secondary Serial Number
(251) - Reference to Source Entity
(252) - Global Identifier Serialized for Trade (GIST)
(30) - Variable Count
(310n) - Net Weight in Kilograms
(311n) - Length in Meters
(312n) - Width or Diameter in Meters
(313n) - Depth, Thickness or Height in Meters
(314n) - Area in Square Meters
(315n) - Net Volume in Liters
(316n) - Net Volume in Cubic Meters
(320n) - Net Weight in Pounds
(321n) - Length in Inches
(322n) - Length in Feet
(323n) - Length in Yards

Figure 7.4: Partial List of Element Strings for the GS1 DataBar Stacked Omnidirectional Composite Barcode

Element Strings – Adding and Moving

1. Select an Element String from the list, and click **Add**. The string is added to the Element Strings for this field list in the center of the dialog and to the Formula section at the bottom of the dialog.

Note: If the selected Element String's application ID displays an "n", the spin control is enabled, allowing you to choose the appropriate value for the "n" position in the Application Identifier. When the value is changed, the formula is updated. The following figure displays the element string (310n) – Net Weight in Kilograms. Listed below this element string is the **Implied Decimal Position** (6). See the General Specification sheet for more information on the meaning of the "n".

2. Highlight an Element String and click **Remove**, **Up** or **Down** to remove or move the string.

Note: The formula is automatically updated when any of these buttons are clicked.

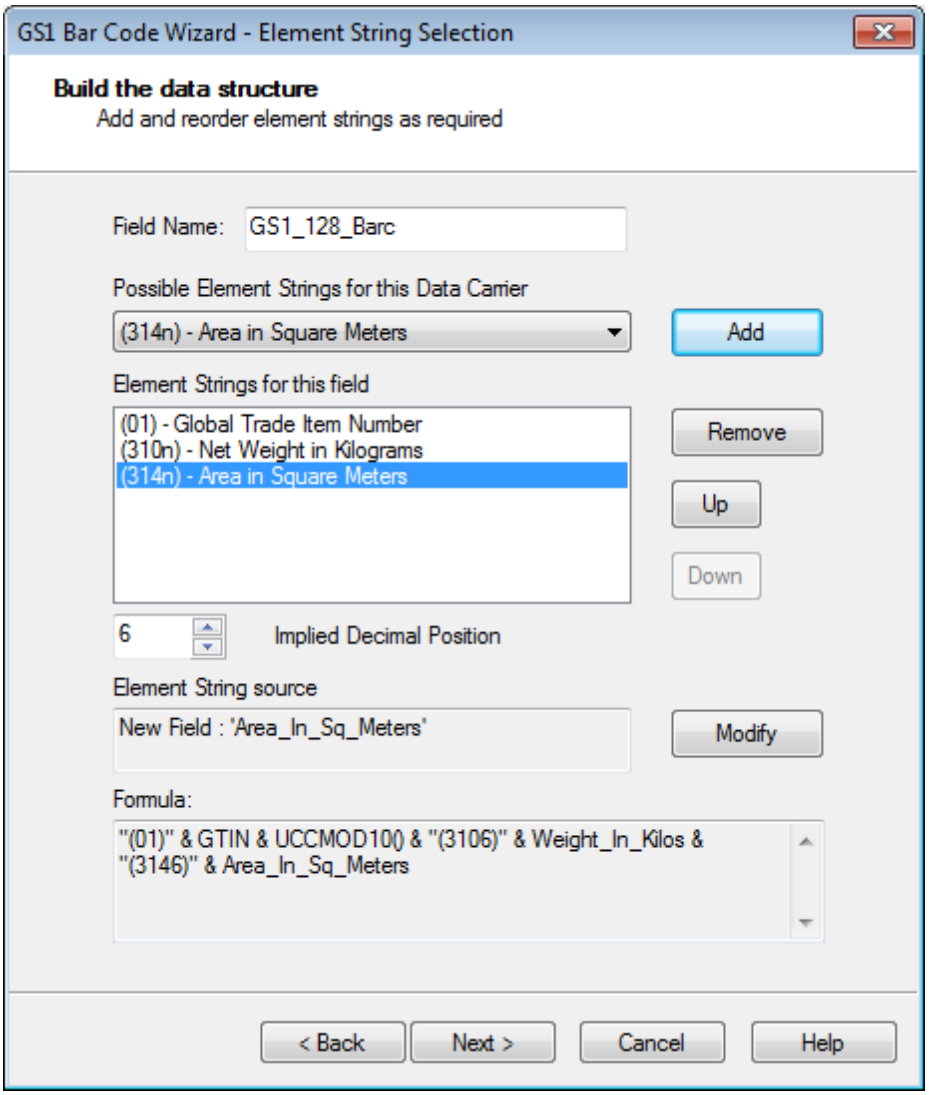


Figure 7.5: Adding, Moving or Removing Element Strings

Why move an Element String up or down? Element strings that are variable in length (and some fixed length strings), such as a Serial Number, require a terminator character (FNC1[]) at the end of the data, unless they are placed as the last field in the data carrier. It is recommended that these fields be placed at the end of the formula when possible to save the extra space that the terminator character takes. Also, some applications require that the strings be placed in a specific order. See the barcode standard or label specification for your barcode to determine the appropriate placement of the element strings.

GS1 Wizard, Part 3 - Element String Modification

Highlight a string, and click **Modify** to change the source of the element string.

Why modify an Element String's Source? The default source for each element string is a new, non-printing field. The term **Modify** applies to the source of the data. If you would like to change the source of the element string's data to come from an existing field on the label, or a fixed string, then click **Modify**.

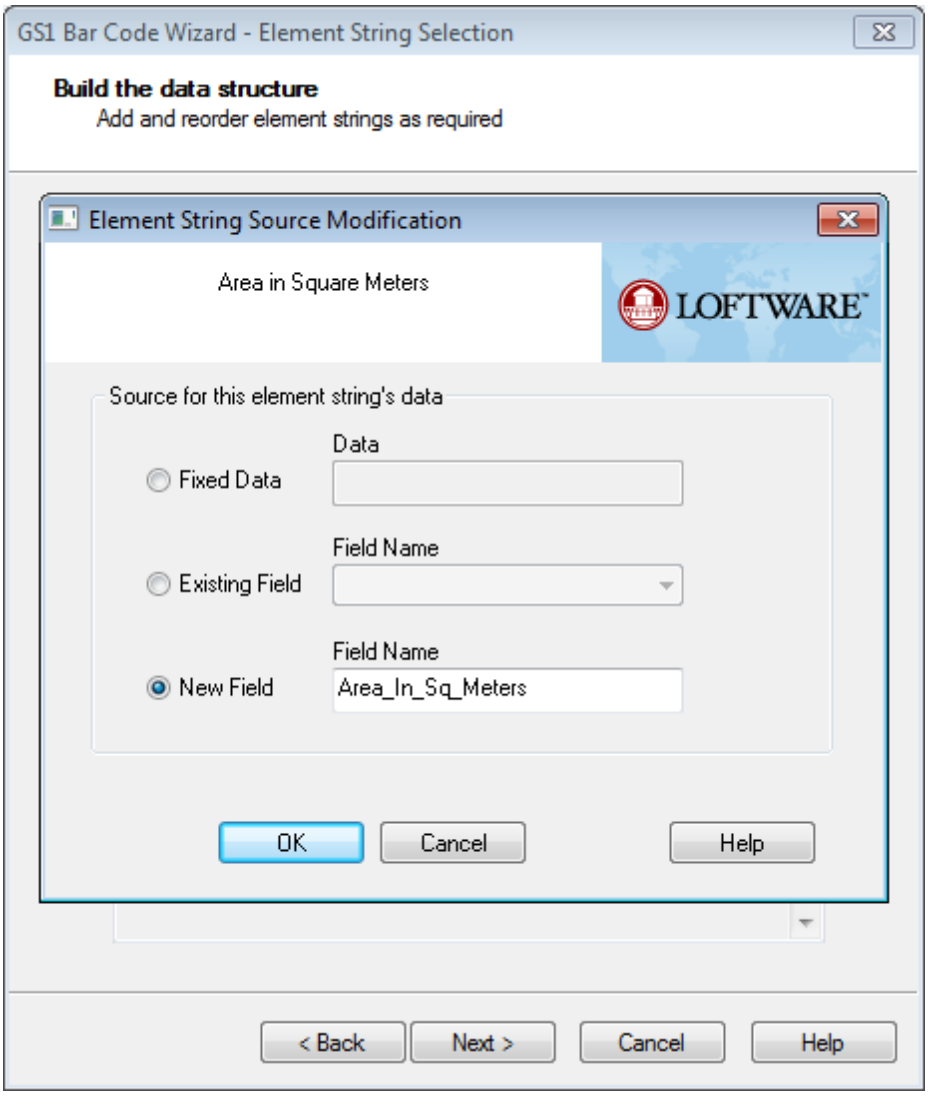


Figure 7.6: Element String Modification

Fixed Data – This allows the data to be added to the data carrier as a fixed string in the resulting formula. As an example, in the figure displayed above, the source for element string called "Country of Initial Processing" is changed to fixed data named "840" in the formula, which is the ISO code number for the United States.

Existing Field – This indicates the data is going to be taken from an existing field on the label.

New Field – This is the default datasource, which creates a new non-printing field. Note that if this label has been constrained using an LST file, those fields are displayed in a drop-down list just as the field name was.

- Click **OK** when you are finished modifying the Element String, or Cancel to exit without modifying the element string.

GS1 Wizard, Part 4 – Wizard Summary

The Wizard Summary screen is displayed:

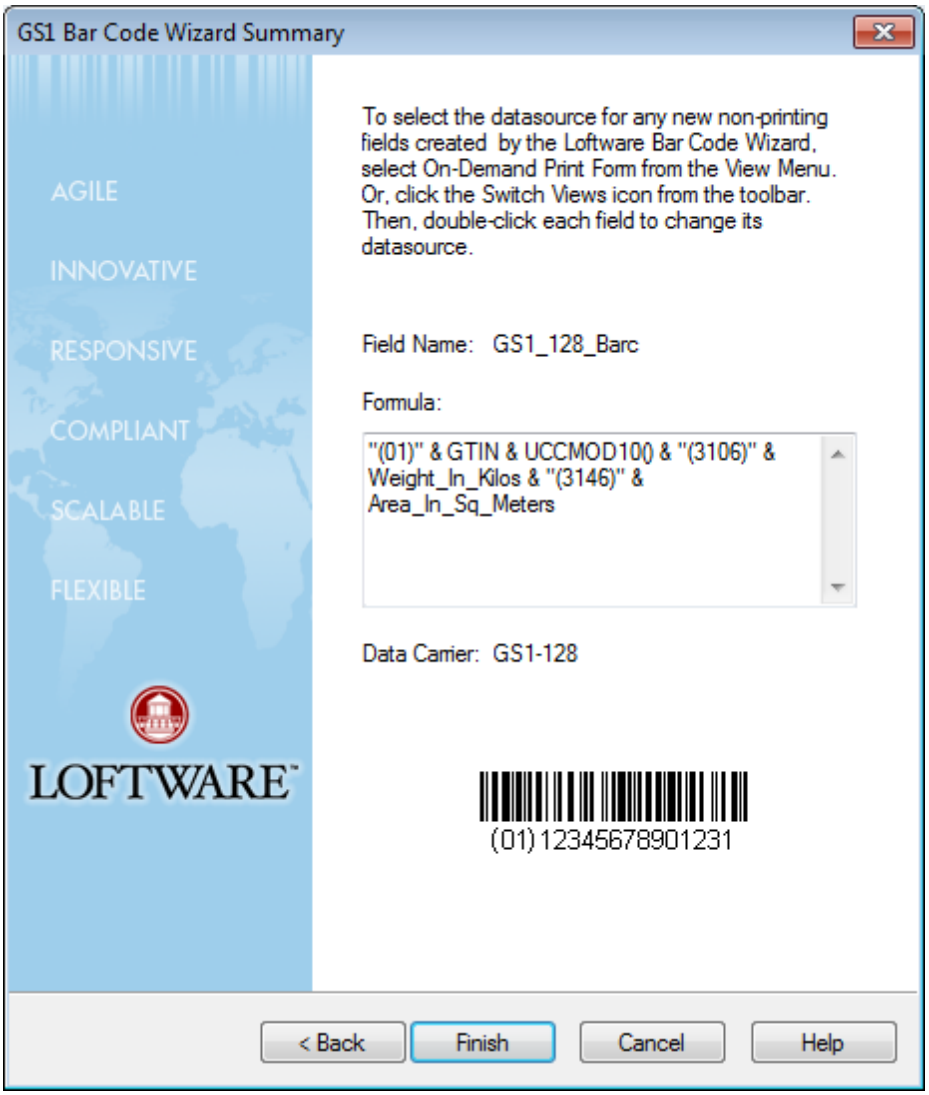

GS1 Bar Code Wizard Summary
AGILE
INNOVATIVE
RESPONSIVE
COMPLIANT
SCALABLE
FLEXIBLE
LOFTWARE
To select the datasource for any new non-printing fields created by the Loftware Bar Code Wizard, select On-Demand Print Form from the View Menu. Or, click the Switch Views icon from the toolbar. Then, double-click each field to change its datasource.
Field Name: GS1_128_Barc
Formula:
"(01)" & GTIN & UCCMOD10() & "(3106)" & Weight_In_Kilos & "(3146)" & Area_In_Sq_Meters
Data Carrier: GS1-128
(01) 12345678901231
< Back
Finish
Cancel
Help

Figure 7.7: GS1 Barcode Wizard Summary

The summary screen contains the following information:

Field Name – The name given to the Field.

Formula – The complete formula as created in Parts 1 and 2. The formula displayed here is not directly editable.

Data Carrier – The title of the Data Carrier as chosen in Part 1, along with a visual representation of the chosen barcode below.

1. Click **OK** if you are finished with the data carrier.
2. Click **Back** to return to previous screens to make changes.
3. Click **Cancel** to exit the Wizard.

Additional Information

If you add the same element string twice, the Wizard lets you know that another instance of this element string exists, and that you may remove one if you did this in error. Duplicate field names are not permitted in the GS1 Barcode Wizard. For example, if an SSCC element string is added when there is an existing field named SSCC, a message is displayed which states that the default name for the second element string "SSCC" has been changed to "SSCC_2".

Changing the Formula

After you finish creating your barcode using the Barcode Wizard, it is possible to go back and alter the barcode's formula.

1. Double-click the barcode in design view. A warning message informs you that the formula you are about to edit was created with the Barcode Wizard, and therefore, any changes you may make to it may render the barcode nonfunctional.
2. Click **OK** to open the **Data Source** dialog.

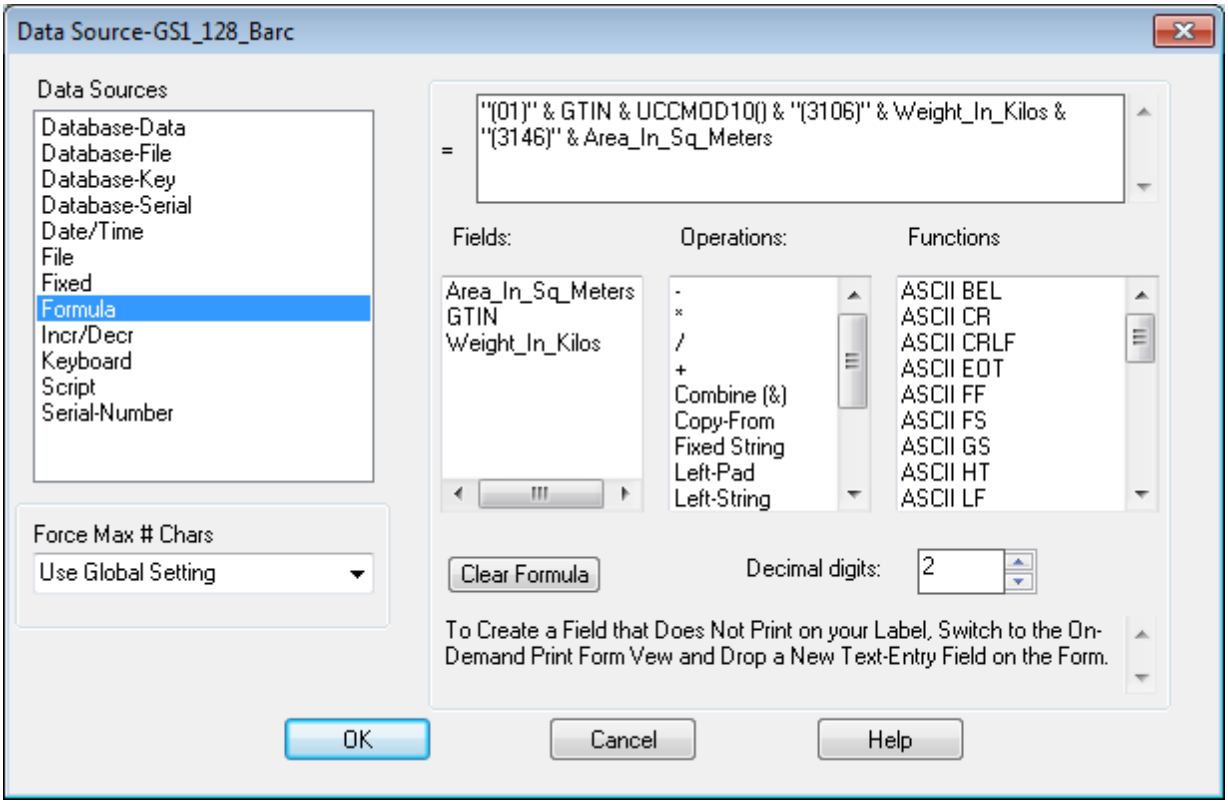


Figure 7.8: Data Source Dialog

3. Edit the formula directly, or make changes to the formula using the **Fields**, **Operations**, or **Functions** columns.
4. Click **OK** when finished, or **Cancel** to exit without making any changes to the formula.

Related Information
For more information on non-printing fields, refer to the *Designing a Label* section in this guide.

GM Barcode Wizard

Introduction

In 1999, General Motors adopted a uniform global parts labeling template that enables suppliers to use a common label for shipment to all GM facilities worldwide. All suppliers shipping production parts to GM facilities were required to begin using the label by March 2000. Loftware developed both a template and a Barcode Wizard for the GM1724 Label Specification in 1999 to meet this requirement, as well as updates as changes to this standard were made.

The wizard guides you in creating the complex PDF417 2D Barcode formula for the label.

Requirements

In order to utilize the powerful components of the GM Wizard, note the following:

1. The Security Level is set to 5 by default and must remain at 5 in order to print the PDF417 barcode with GM's compliance standards.
2. You will need a printer that has the ability to natively print PDF417 Barcodes.
   - See **Printers** on the **Tech Support** section of the Loftware Web site to view the supported models.
   - Of the supported Printer Families, be aware that not all models within these families are capable of printing the PDF417 Barcode.
   - Of the models that are capable of printing the PDF417 Barcode, not all of them have the correct firmware to print the PDF417 Barcode correctly. In some cases, firmware upgrades or changes may need to be made. Check with your hardware manufacturer for details.
   - Fonts: Loftware does NOT recommend the use of TrueType Fonts for labels, as these are downloaded as images which can significantly decrease the throughput time. GM does NOT require you to use TrueType fonts at this time; however, any Native Fonts utilized must be equivalent.
   - Please check with the Printer Manufacturer for this information regarding your printer's ability to print the PDF417 barcode before calling Loftware for support.
3. A PDF417 scanner or viewer is not required but is recommended in order to view the accuracy of your design and formula prior to submission to GM. GM mentions laser raster scanners and viewers in its documentation.

Specifications

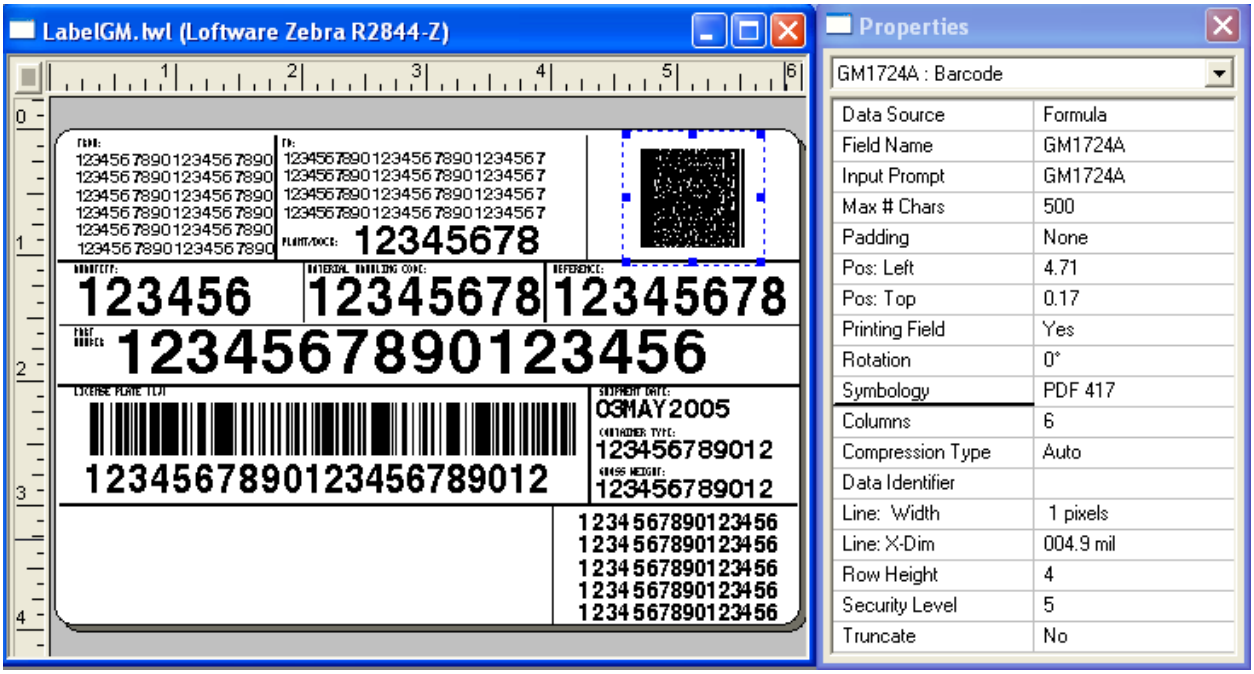


Figure 7.9: GM label 1724-A created using the GM Barcode Template and Wizard

You may find current specification information including contacts and telephone numbers by visiting the GM Supplier Web site. Link to the GM Supplier site that contains pertinent information about format and font specs, data sources, and data layouts. Templates and layover information are also displayed. The GM1724 was replaced with the new standard as in the following table:

Standard	Description
GM1724-A	Individual Containers: a label for productive parts used on containers of like part numbers. (Sequenced parts, modular parts, and non-productive parts are not currently covered under this standard, but service parts are included).
GM1724-B	Master Label: Suppliers are notified if this label is required by their customers.
GM1724-C	Mixed Label: Suppliers are notified if this label is required by their customers.

Note: Please read these specifications completely before proceeding with the GM Barcode Wizard.

GM Barcode Wizard: What it Does and Does Not Do

Loftware's GM Barcode Wizard automatically builds the complex PDF417 Barcode, and inserts it into a pre-made GM template. The template contains all the sub-blocks needed to meet the new standard. The barcode is built by systematically adding together a data sequence that creates a formula designed for the specification. When placed into the template, this completes the required GM Label. This facilitates designing both the required and recommended fields for this label. As you enter your specific data, the formula is automatically updated to reflect each addition you make.

To ensure compliance, Loftware advises you to design your label and submit it to GM for approval before printing production labels. The GM Supplier Site has label submission information.

> **Warning!** If you delete any fields created with the wizard, all the data and any formulas you have designed are lost. If you change the formula for this label after you have designed it, then the label may not print correctly, and may not be in compliance.

GM Template and Wizard Instructions

Select a GM Template

1. Select **File** | **New** from the menu bar in the Loftware Label Manager Design.
2. Select **Compliance Template** in the New Media Wizard, and click **Next**.
3. Select a Device Manufacturer and Model from the drop-down lists, click **Next**

The following is displayed:

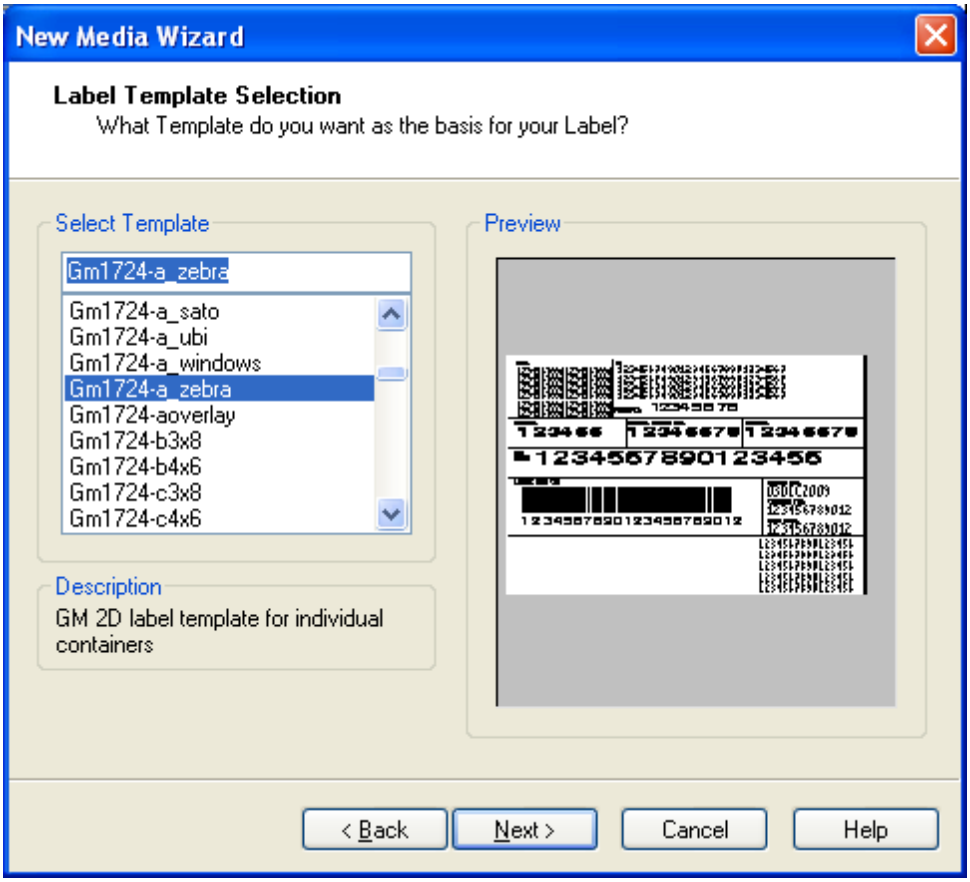


Figure 7.10: Choosing a Template

4. Select the template for the GM label you want to design, and click **Next**.
5. Click **Finish** when the summary screen is displayed, or click **Back** to change any selection.

Note: Some of the library of templates listed have printer names associated with them. Choose a template from the template list that matches the printer previously chosen.

The template for the label is displayed in design view.

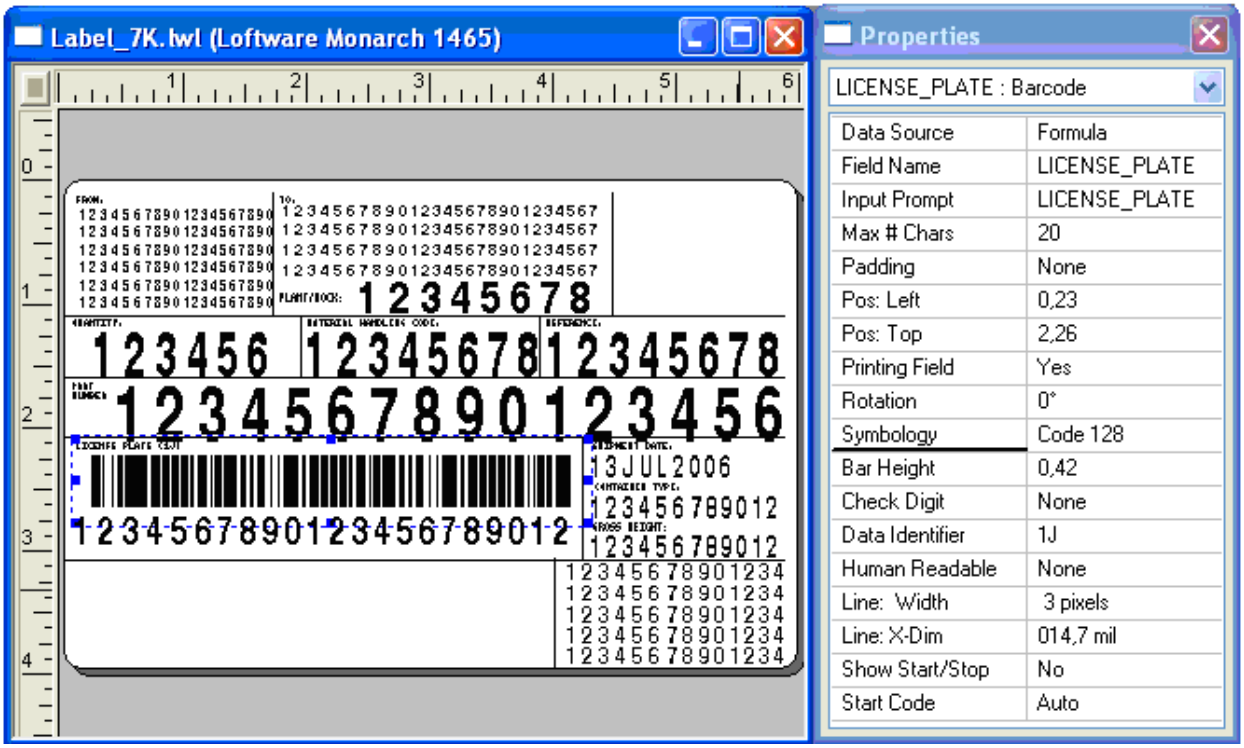


Figure 7.11: GM Label Template

6. Continue creating the PDF417 barcode using the GM Barcode Wizard:

GM Wizard, Part 1: Getting Started

From Loftware design mode:

1. Select Insert | Barcode Wizard from the Design menu.
2. Select GM/HIBC/TLC39 Barcode Wizards from the list of available wizards, and click **Next**.

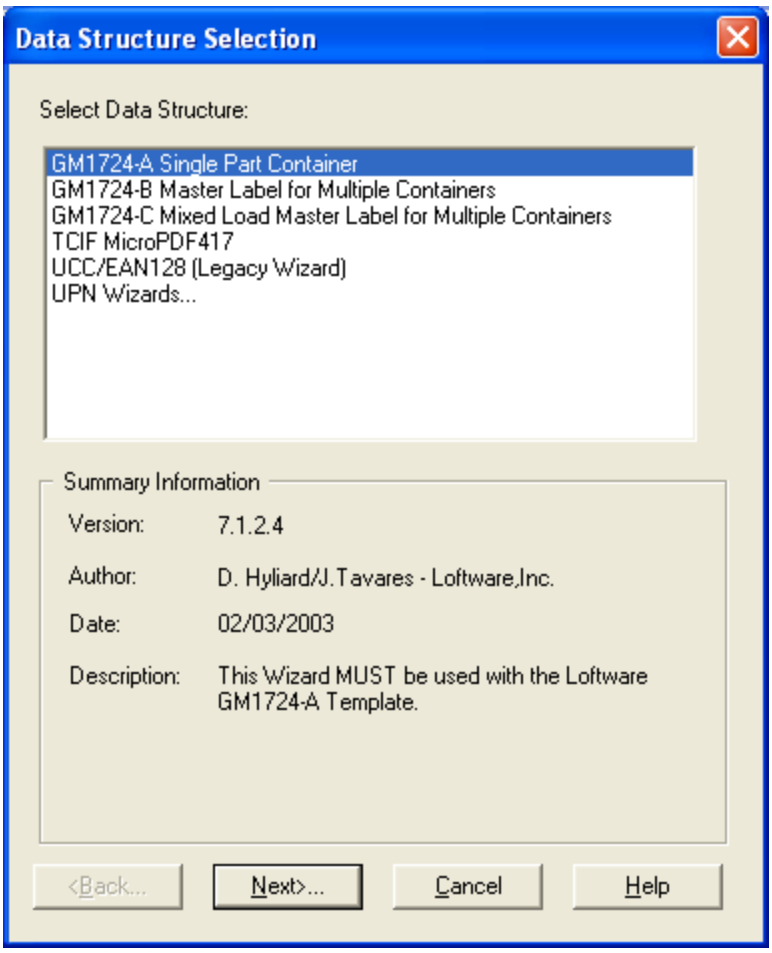


Figure 7.12: Wizard Data Structure Screen

GM Wizard, Part 2: Building the GM Data Structure

1. Select **PDF417** from the Symbology List, and click **OK**. The first dialog box, regarding Kanban information, is displayed.

Note: Kanban is a term used to describe the flow process in Production Ordering. Kanban specifies the item and the production quantity, the materials required, where to find them, and where to store the finished item.

Note: If you make an error in selection, click the Back button on the GM Barcode Wizard, and make the correct choice.

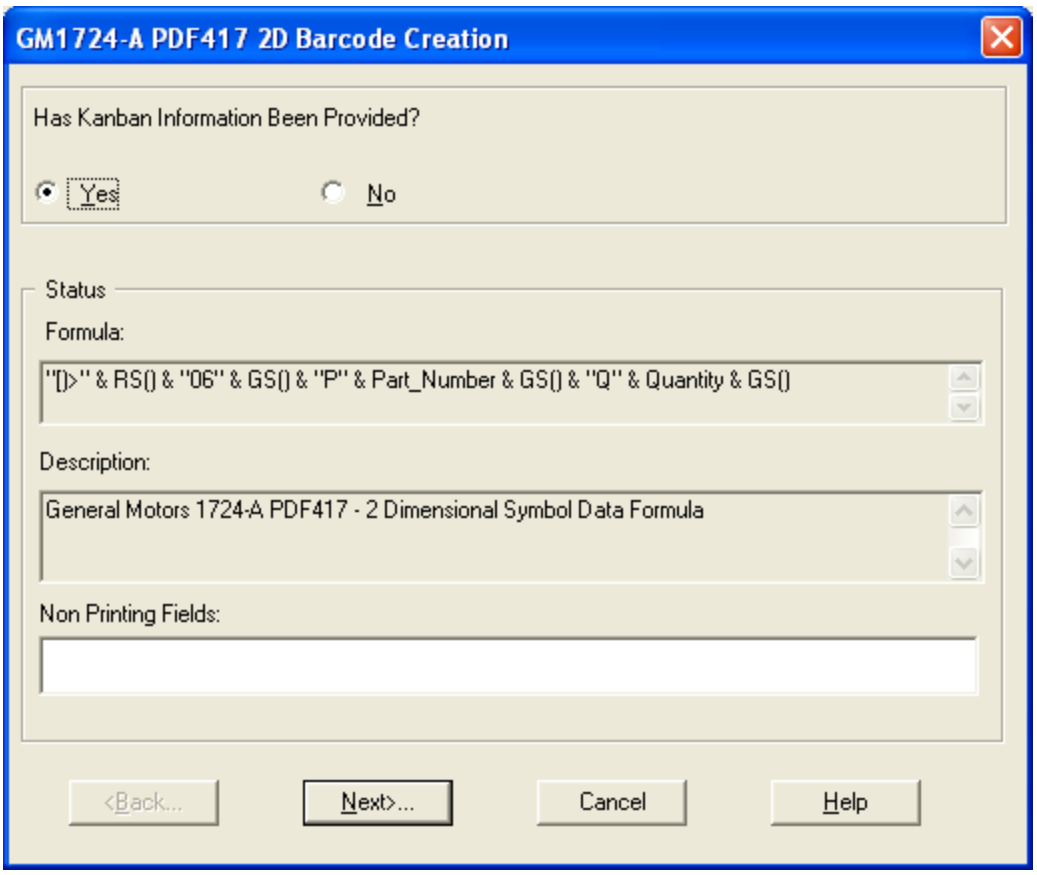


Figure 7.13: Kanban dialog box

2. Select **Yes** or **No**, and click **Next**.
    - If **Yes** is selected, the **Container Type** dialog box is displayed.

Note: What is Container Type? Container type information is a descriptor of the actual container that holds the parts. The descriptor should match the designated container type within the GM Plant(s).

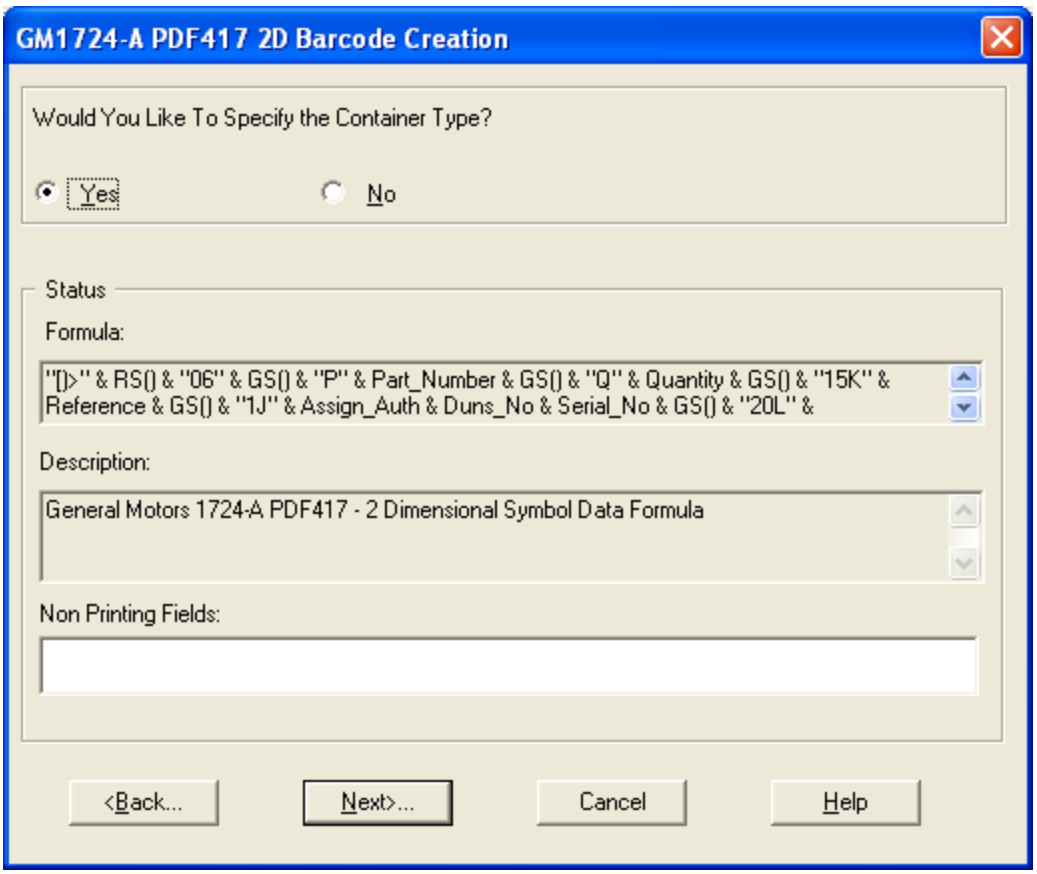

GM1724-A PDF417 2D Barcode Creation
Would You Like To Specify the Container Type?
Yes
No
Status
Formula:
"[)>" & RS() & "06" & GS() & "P" & Part_Number & GS() & "Q" & Quantity & GS() & "15K" &
Reference & GS() & "1J" & Assign_Auth & Duns_No & Serial_No & GS() & "20L" &
Description:
General Motors 1724-A PDF417 - 2 Dimensional Symbol Data Formula
Non Printing Fields:
<Back...
Next>...
Cancel
Help

Figure 7.14: Container Type Dialog Box

- If **No** is selected, the **Reference or PO Information** dialog box is displayed.

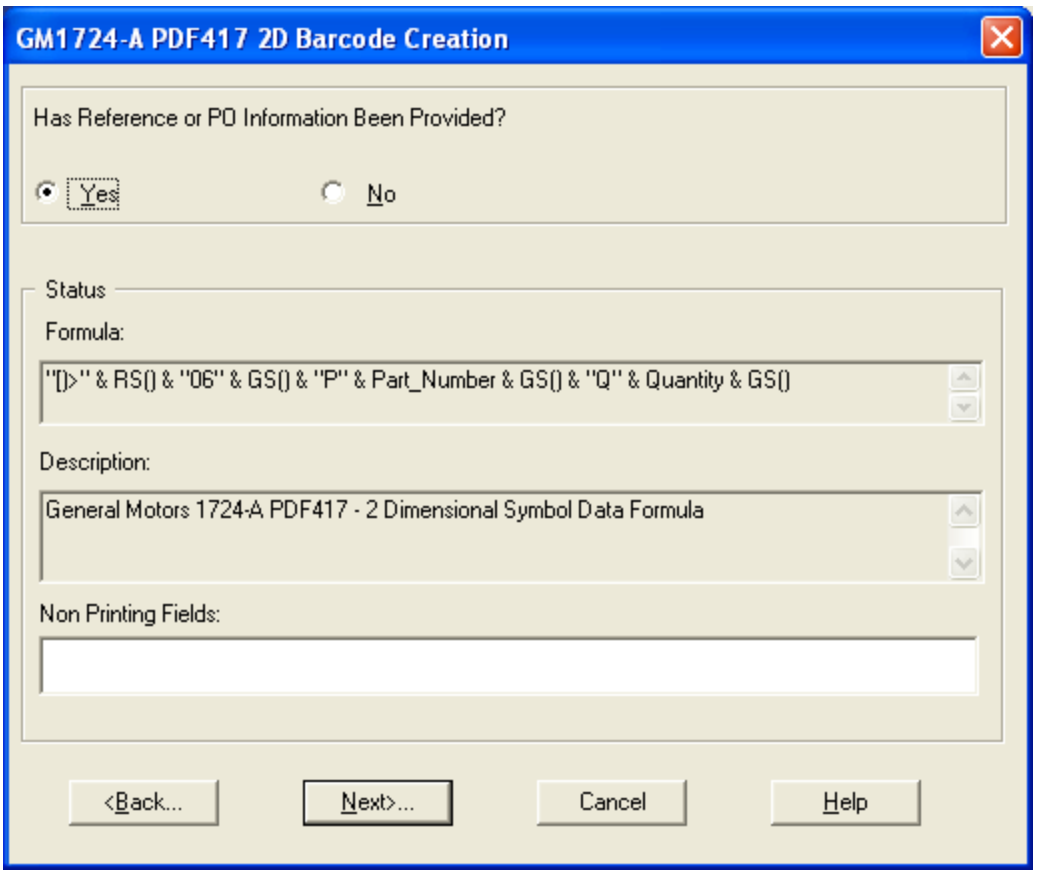

GM1724-A PDF417 2D Barcode Creation
Has Reference or PO Information Been Provided?
Yes
No
Status
Formula:
"[)>" & RS() & "06" & GS() & "P" & Part_Number & GS() & "Q" & Quantity & GS()
Description:
General Motors 1724-A PDF417 - 2 Dimensional Symbol Data Formula
Non Printing Fields:
<Back...
Next>...
Cancel
Help

Figure 7.15: Reference or PO Information Dialog Box

4. Select **Yes** or **No**, and click **Next**.
   - If **Yes** is selected, the **Field Name** dialog box is displayed.
   - If **No** is selected, the **Container Type** dialog box is displayed.
5. From the **Field Name** dialog box, enter a **Field Name**, or accept the default name, and click **Finish**.
6. From the **Container Type** dialog box, select **Yes** or **No**, and click **Next**. The **Field Name** dialog box is displayed.
7. Enter a field name, or accept the default name, and then click **Finish**.

GM Wizard, Part 3: Finishing and Printing the Label

After you have entered a name for the label and clicked **Finish**, the field is placed on the label in the upper left corner. Use the cursor or the keyboard arrows to move the barcode field into place at the upper right corner of the label (for GM1724-A labels, as shown in this section).

The completed GM Label, with the PDF417 barcode in place, is shown:

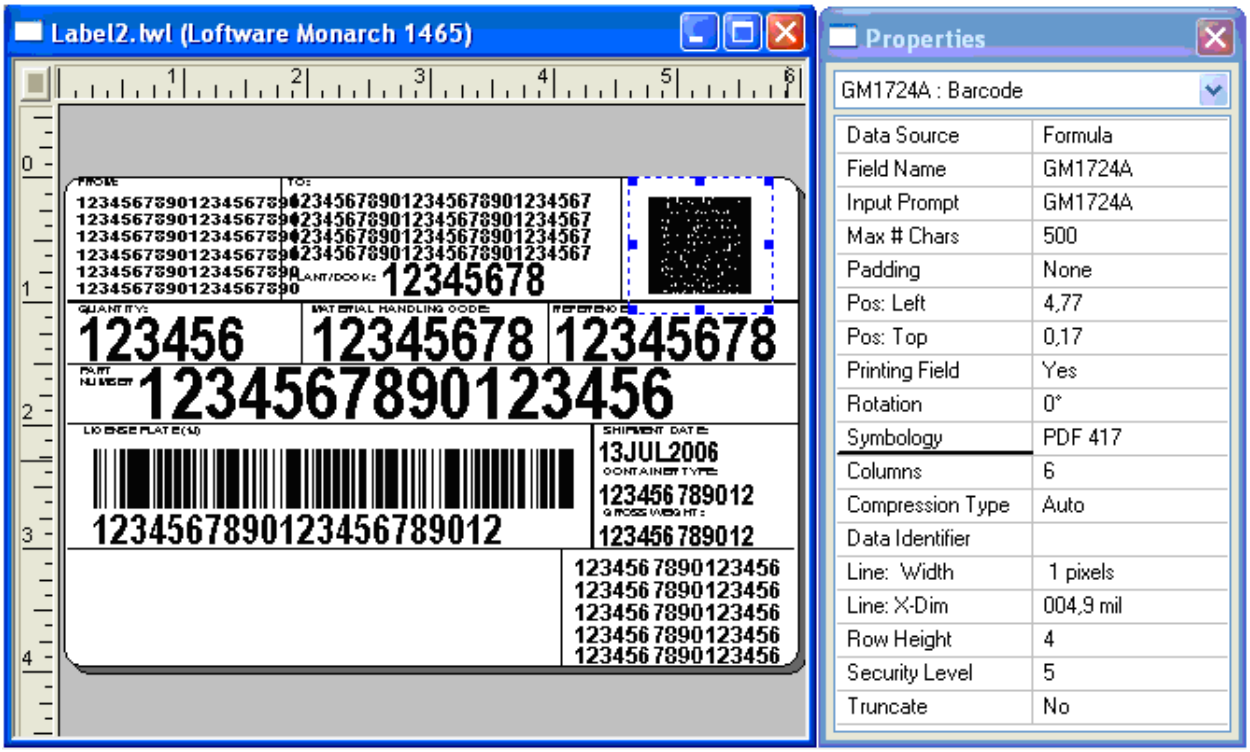


Figure 7.16: GM label, with PDF417 Barcode Inserted

You can print this label using Loftware technology such as:

- On-Demand Print Module
- The Loftware Print Server Technology

Or, from other Windows Applications using:

- Loftware's ActiveX Controls, or the Thin Clients
- Loftware's Internet Printing Applications

Note: You may have to make changes on the On-Demand Print Form to configure any non-printing fields you may have.

Advanced Information

GM Formula Data

Double clicking the newly created barcode displays the formula created by the Loftware GM Wizard:

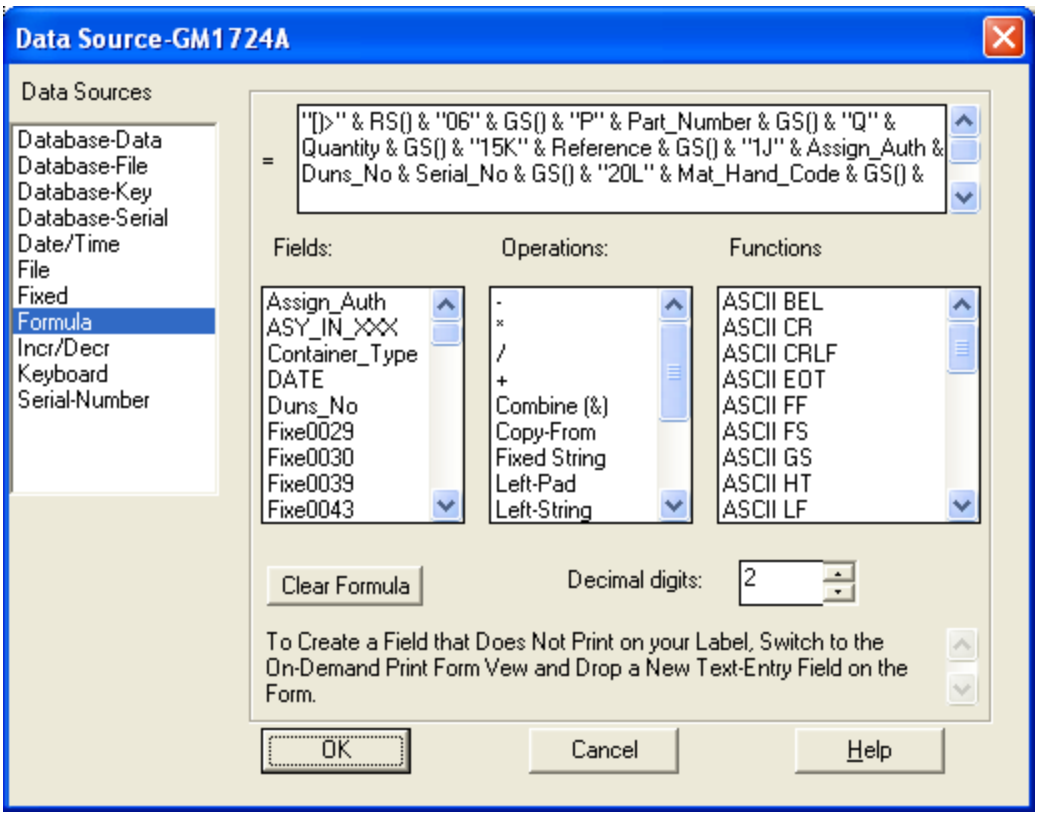


Figure 7.17: Formula Dialog Box

Data Fields

The following data fields are included in the PDF417 symbol on the GM-1724-A label:

Note: "*" Indicates a required field, however, this is subject to change by General Motors without notice. As suggested previously, verify all GM specifications with GM.

```
Part Number*
Part Quantity*
Kanban
Reference
Purchase Order
Plant/Dock*
License Plate*
Material Handling Code*
Container Type (Recommended)
Weight (Recommended)
```

Note: The License Plate field is a combination of the supplier ID, combined with the supplier generated ship pack serial number.

GM - Additional Components

In addition to the data fields, there are additional components that are required by GM for processing of the label. These components are detailed in the following table:

Component	Fixed Data	Function	Variable Data Field Name
*Compliance Indicator	[)>		
*Format Trailer		RS()	
*Format Header	06		
*Part Number Data ID	P		
*Part Number			Part_Number
*Data Element Separator		GS()	
*Quantity Data ID	Q		
*Ship Qty			Quantity
*Data Element Separator		GS()	
Kanban Data ID	15K		
Kanban			Reference
Data Element Separator		GS()	
Reference Data ID	K		
Reference			Reference
Data Element Separator		GS()	
*License Plate Data ID	1J		
*License Plate			ASSIGN_AUTH & DUNS_NO & SERIAL_NO
*Data Element Separator		GS()	
Material Handling Code Data ID	20L		
*Material Handling Code			Mat_Hand_Code
Data Element Separator		GS()	
Container Type Data ID	B		
Container Type			Container_Type
Data Element Separator		GS()	
Weight Data ID	7Q		

Component	Fixed Data	Function	Variable Data Field Name
Weight			Weight
*Weight Qualifier	GT		
*Format Trailer		RS()	
*Message Trailer		EOT()	

The functions from the table above result in the encoding of the following characters into the symbol:

Function	Hex	Decimal
GS()	1D	29
RS()	1E	30
EOT()	04	04

Related Information
Refer to the printing sections in this guide, and *The Loftware Print Server*, *Clients*, and *Internet Printing* in the Loftware Print Server User's Guide to review how to print this label.

UPN Healthcare Wizard

- Allows the creation of all UPN-approved barcodes, including: HIBC Code 128, HIBC Code 39 and GS1-128 (UCC/EAN-128)
- Allows automatic merging of barcodes to meet UPN specifications
- Allows automatic insertion of flag characters and check digits required for healthcare industry barcodes
- Supports UPN-approved data structures

This section walks you through the entire barcode creation process using Loftware's Barcode Wizard. Instructions include how to:

- Create Primary, Secondary, or Combined barcodes for your label file that require UPN (Universal Product Number) barcodes.
- Create other sophisticated barcodes using the Loftware Barcode Wizard.

UPN Barcode Options

Loftware Label Manager and the Loftware Print Server use the Loftware GS1 Barcode Wizard to help create barcodes that comply with the UPN specification for both the GS1 and HIBC. The wizard walks you through a series of screens asking specific questions about the information you want in your Primary and/or Secondary barcode.

The barcodes contain these options:

Option	Description
Primary	Labeler Identification Code, Manufacturer ID, Product/Catalog Number, and Unit of Measure.
Secondary	Information such as Lot Number, Quantity, and/or Date.
Combined	Combines the Primary and Secondary information into one barcode.

The questions you answer automatically create a formula that produces the barcode for your label.

Creating a Primary and Secondary LIC Barcode

UPN Wizard, Part 1: Getting Started

- Open the Barcode Wizard
- Choose UPN

To get started

1. Click **Start** | **All Programs** | **Loftware Labeling** | **Design 32**. A blank label on the left side of the screen and a blank Properties Box on the right side are displayed.

   Note: If you do not see the Properties Box, use the **View** | **Properties** menu command to display it. If you do not see a blank label, select the **File** | **New** menu commands and create a new label. To adjust the label size, use the **File** | **Media Setup** menu command.

2. Select **Insert** | **Barcode Wizard** menu at the top of the screen.
3. Select GM/HIBC/TLC39 Barcode Wizards from the list of available wizards, and click **Next**.

UPN Wizard, Part 2: Building A LIC Data Structure

- Create a LIC Primary Barcode.
- Learn about Data Structure Screens.
- Add specific and optional information to a Primary Barcode.

To build a LIC data structure

1. Select UPN Wizards at the end of the Data Structure list. The first Barcode Wizard dialog is displayed.
2. Click **Primary**.

UPN Wizard, Part 3: Creating a Primary Barcode

To create a primary barcode:

1. Select the LIC option from the Data Structure screen.
2. Select the barcode symbology you want to use.

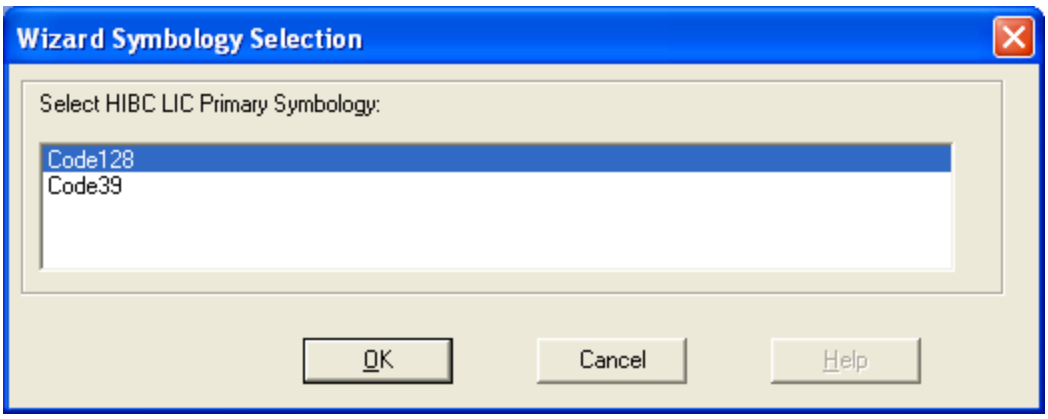


Figure 7.18: Symbology selection Screen

If this is the first time this symbology has been selected, the following screen is displayed:

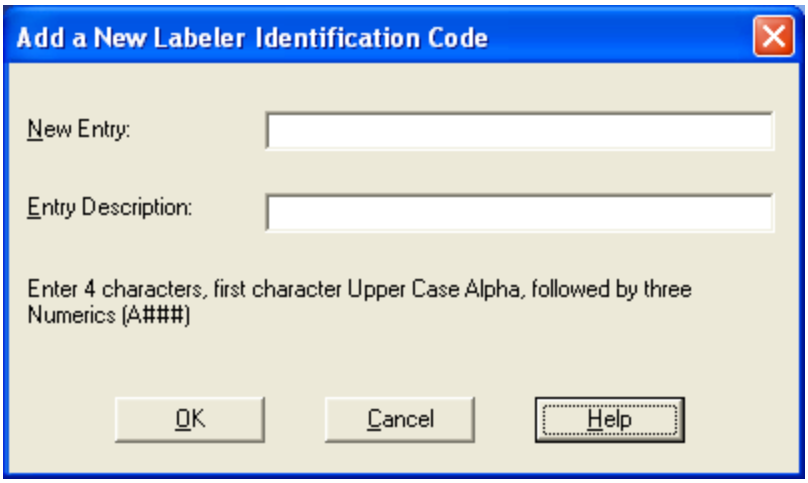


Figure 7.19: Labeler Identification Display Screen

3. Type in a New Entry, (Example: A234), and the Entry Description (Example: 'Flag Character'), and click **OK**.
4. Select the Labeler Identification Code from the box, and click **Next**.

Note: To add another identification code, click **Add New Entry** and follow the instructions on the screen. To delete a code, select the Identification Number and then Click **Delete Entry**. Warning! Once you delete the ID, you cannot undelete!

The following screen is displayed:

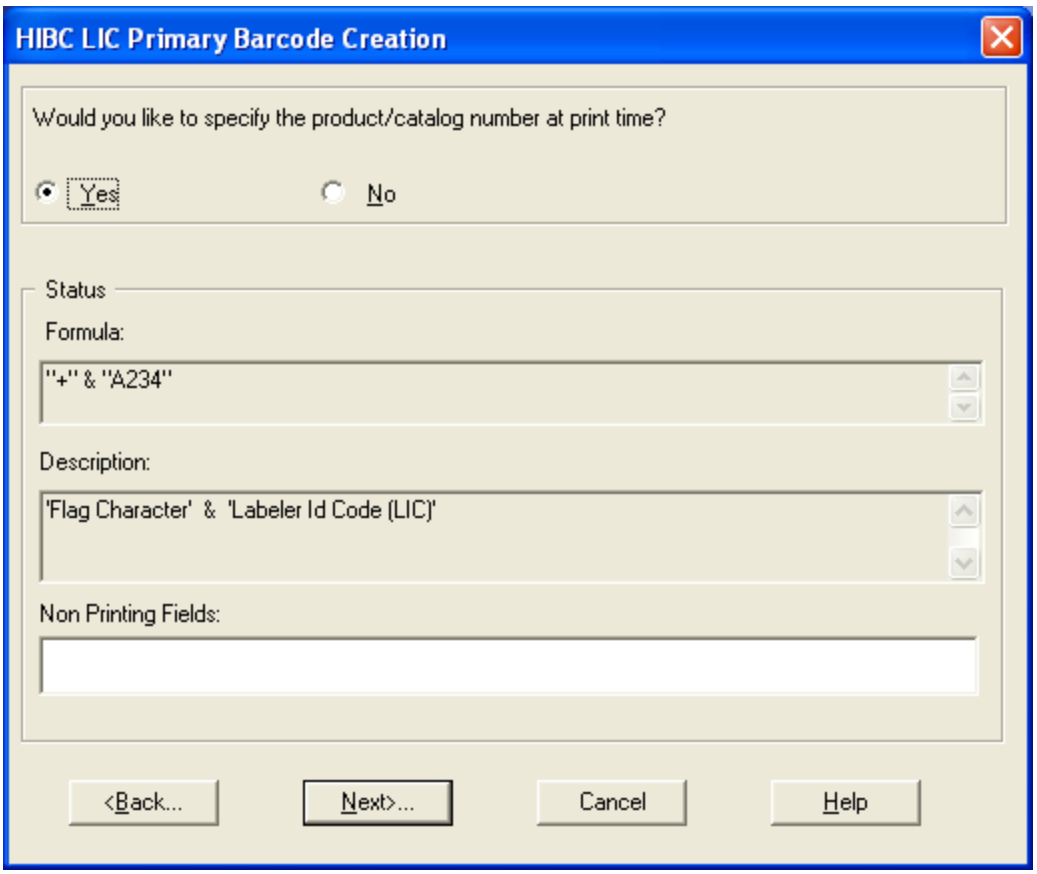


Figure 7.20: Product/Catalog Number dialog box

5. Select **Yes** or **No**, click **Next**.
    - Selecting **Yes** allows you to enter the part number at print time from the keyboard (On-Demand printing) or a database (Range Printing).
    - Selecting **No** allows you to enter the part/catalog number on the next screen. You do not have to enter the part/catalog number at print time.
6. Type in new values for Field Name and Length or leave the default values in place, and click **Next**.
    - If **No** is selected, the next dialog box prompts you to enter a Product Number.
7. Enter up to 13 digits, and click **Next**.

The Unit of Measure ID screen is displayed.

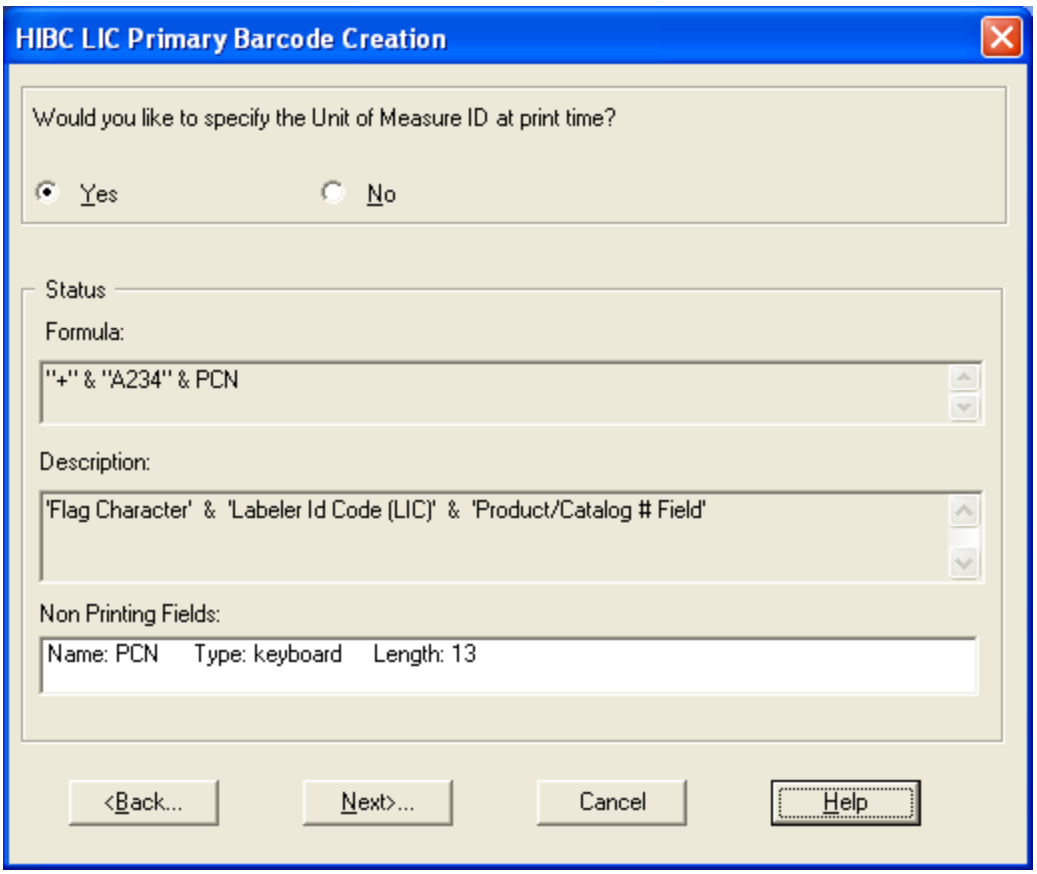


Figure 7.21: Unit of Measure ID at Print time Dialog Box

8. Select **Yes** or **No**, and click **Next**.
9. Enter a field name for Unit of Measure, and click **Next**.
10. Enter a Unit of Measure value (see the following), and click **Next**.

0 = unit of use	5 = case
1 = unit of sale	6 = reserved
2 = reserved	7 = master case
3 = carton	8 = reserved
4 = reserved	9 = variable quantity container

11. Enter a name for the Primary barcode, and click **Finish**.

Note: If data is entered from a keyboard or database for non-printing fields, select On-Demand Print Form from the View menu, or click the Customize On-Demand Print icon from the toolbar. Then, DOUBLE-Click each field to change its data source.

You may see the following screen (after adjusting the fields) depending on your choices:

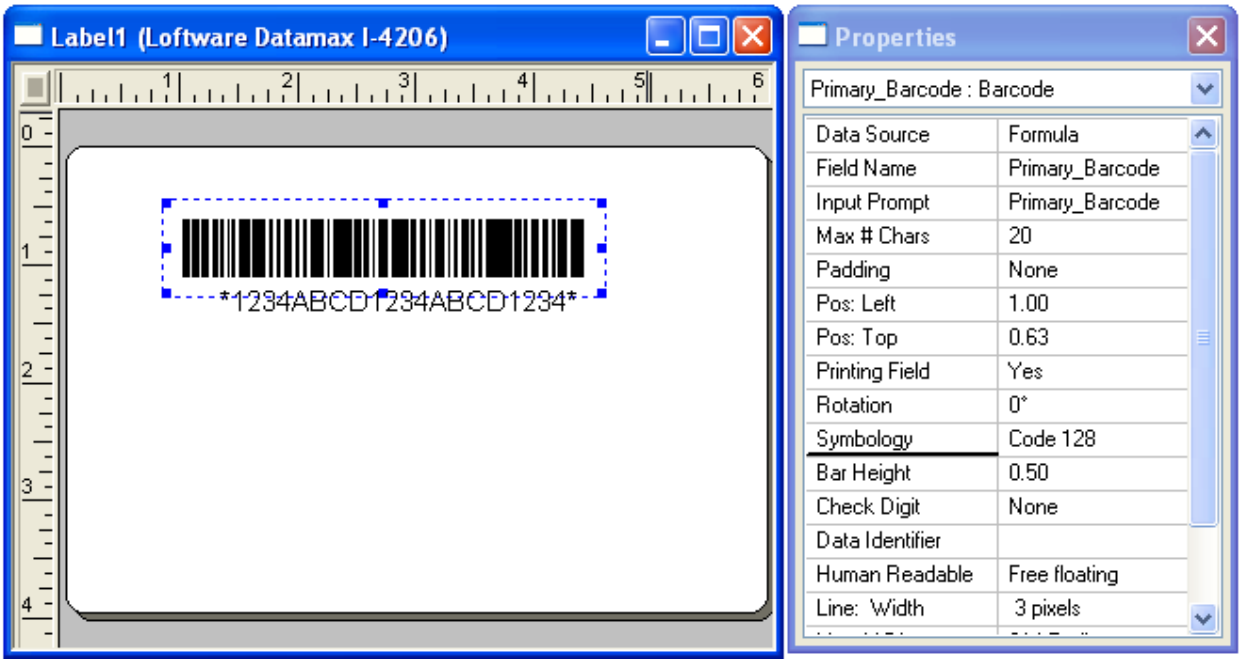


Figure 7.22: Primary Field Creation

UPN Wizard, Part 4: Creating a Secondary Barcode

You can create a LIC or a GS1 Secondary Barcode containing information such as Lot Number, Quantity, and/or Date. This example allows you to:

- Create a LIC Secondary barcode
- Learn about data structure screens
- Add Julian date
- Add Lot Number

To create a Secondary Barcode

1. Follow the steps from UPN Wizard, Part 1, in the preceding section.
2. Select and press the UPN Wizard button. The following is displayed:
3. Click the Secondary button; select LIC as the Secondary barcode data structure, and click **Next**.
4. Select the barcode symbology you want to use, and click **OK**.

The following screen is displayed:

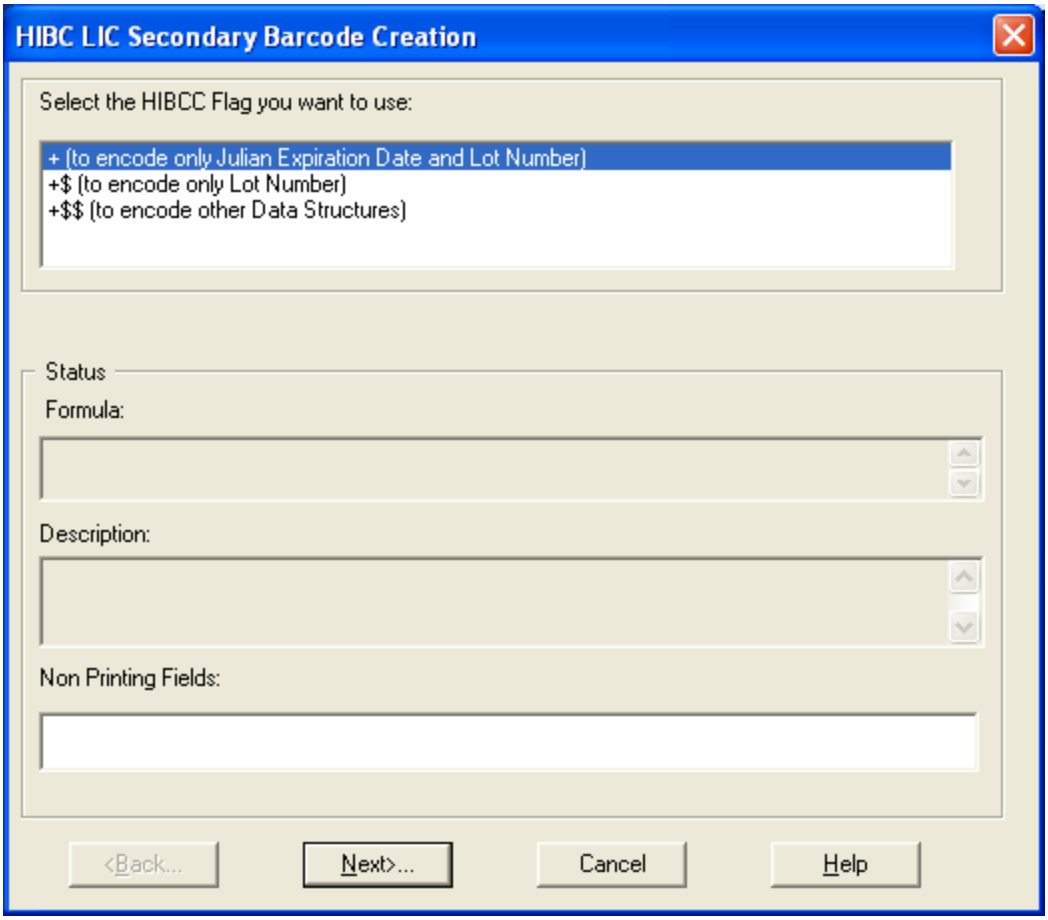


Figure 7.23: Selecting the HIBC Flag Character

5. Select the flag you want to use, and click **Next**.

UPN Wizard, Part 5: Create a Barcode with Julian Date and Lot Only

Creating an Expiration Date in Julian format and a Lot/Batch number in the bar-code:

1. Select the Symbol to encode, "Only the Julian Date" and "Lot Number" (+), and click **Next**.
2. Enter a field name for the date.
3. Enter the number of days until the product expires, and click **Next**.

Example

If the product expires in one year, enter 365. The date printed on the label is one year from the day the label is printed.)

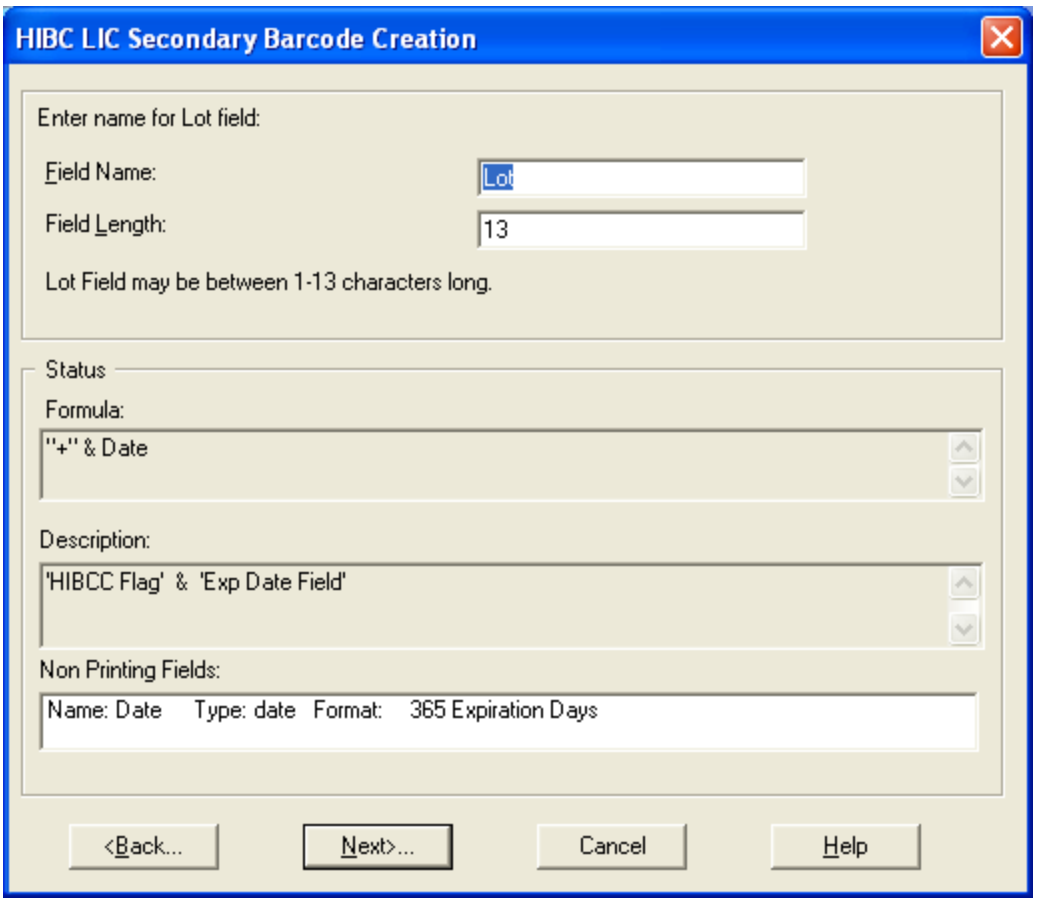


Figure 7.24: Lot Field Creation

4. Enter a field name and length for the Lot, and click **Next**.

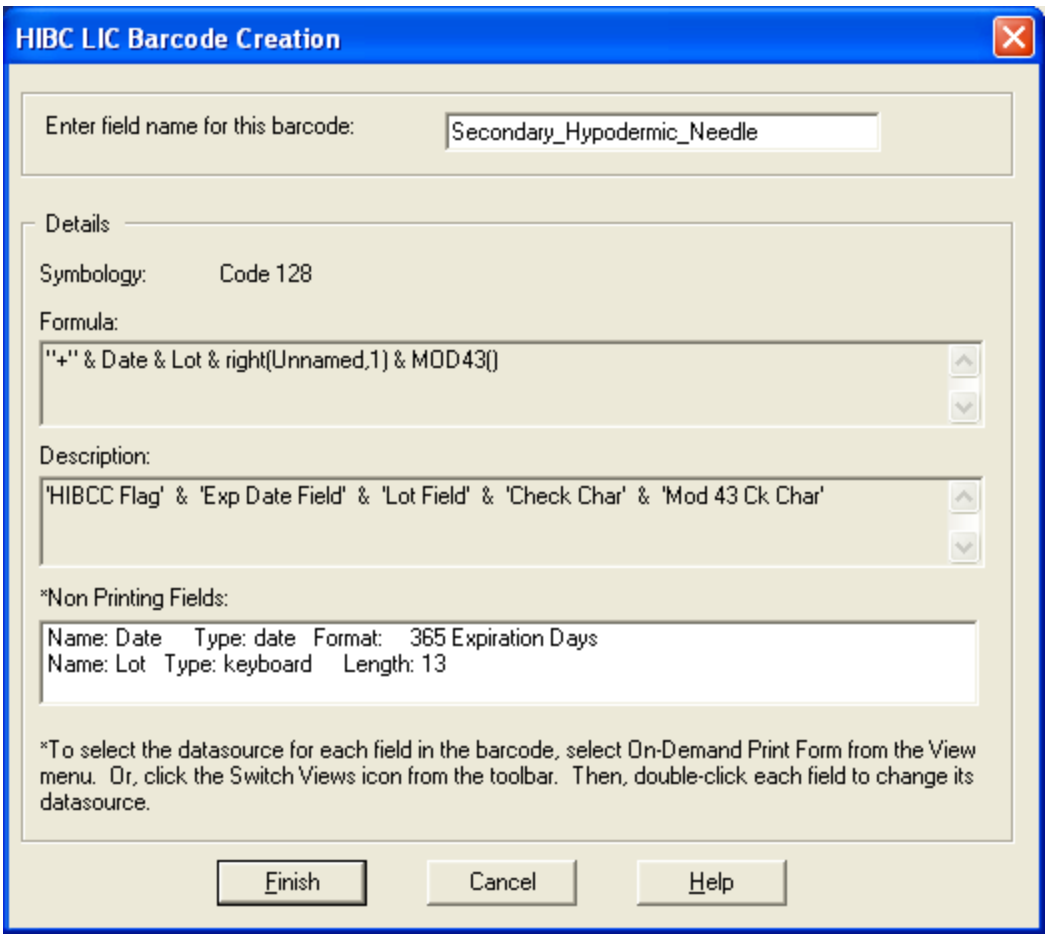

HIBC LIC Barcode Creation
Enter field name for this barcode:
Secondary_Hypodermic_Needle
Details
Symbology:
Code 128
Formula:
"+" & Date & Lot & right(Unnamed,1) & MOD43()
Description:
'HIBCC Flag' & 'Exp Date Field' & 'Lot Field' & 'Check Char' & 'Mod 43 Ck Char'
*Non Printing Fields:
Name: Date Type: date Format: 365 Expiration Days
Name: Lot Type: keyboard Length: 13
*To select the datasource for each field in the barcode, select On-Demand Print Form from the View menu. Or, click the Switch Views icon from the toolbar. Then, double-click each field to change its datasource.
Finish
Cancel
Help

Figure 7.25: Name Secondary Barcode Symbology

5. Enter a field name for the Secondary barcode, and **Finish**.

Note: If data is entered from a keyboard or database for non-printing fields, select On-Demand Print Form from the View menu, or click the Customize On-Demand Print icon from the toolbar. Then, DOUBLE-Click each field to change its data source.

The Secondary Barcode is placed on the upper left corner of the label. Use the mouse cursor, the **Properties** Box, or the arrow keys to move the new barcode and the human readable field into place below the Primary Barcode.

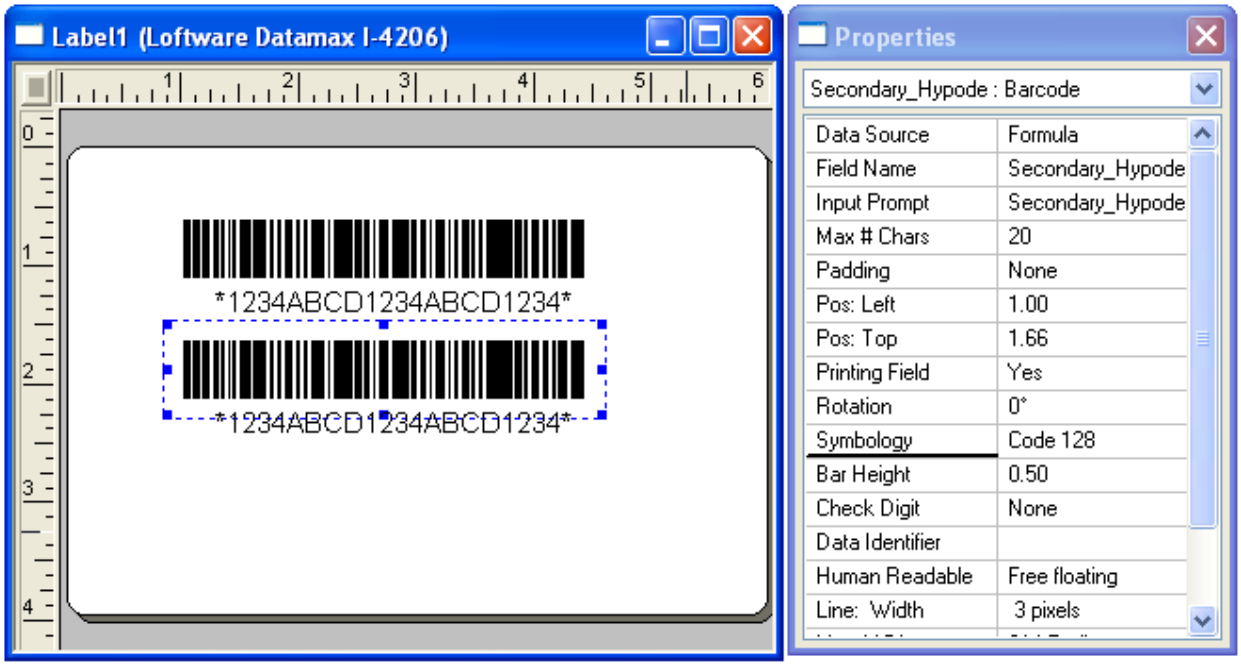


Figure 7.26: Secondary Barcode placed on the Label.

UPN Wizard, Part 6: Create LIC Secondary Barcode with Lot Only

For a product with a secondary barcode and lot only:

1. Select +$ from the HIBC LIC Secondary Barcode Creation dialog box7, and click **Next**.
2. Enter a name for the Lot and a field length, and click **Next**.
3. Enter a name for the Secondary barcode, and click **Finish**.

Note: If data is entered from the keyboard or database using non-printing fields, select the On-Demand Data Entry form from the View menu, or click the Switch Views icon from the toolbar. Then, double click each field to change its data source.

UPN Wizard, Part 7: Creating LIC Secondary Barcode Using Other Data Formats

1. Select +$$ (to encode other data structures) from the HIBC LIC Secondary Barcode Creation dialog box, click Next.
2. Selecting +$$ allows you to include Quantity, Date and/or Lot and Batch Number on your Secondary Label. First, decide if you want to include a Quantity on your label by choosing **Yes** or **No**.
3. Select **Yes** or **No** and click **Next**.
   - If **No** is selected, go to Step 5.
   - If **Yes** is selected, continue with Step 4.

4. Select the 2 or 5 digit quantity format you want, and click **Next**.
   - Select 5-digits (QQQQQ) if you are not sure which format you want.
5. Enter a name for Quantity, and click **Next**.

Note: If you did not select Quantity, then the references to that field are not in the Formula, Description, and Non-Printing Fields boxes.

6. Select **Yes** or **No**, and click **Next**.
   - If **No** is selected, go to Step 9.
   - If **Yes** is selected, a Date Formula dialog box is displayed.
7. Select the date format you want (scroll through the list for more options), and click **Next**.
8. Enter a name for the date and the number of days until the product expires, and click **Next**.

Example

If the product expires in one year, or 365 days, enter 365. The date printed on the label is one year from the day the label is printed.

Note: If you did not select Quantity or Date, then the references to those fields are not in the Formula, Description, and Non-Printing Fields boxes.

9. Enter a name for the Lot and a field length, and click **Next**.
10. Enter a name for the Secondary barcode, and click **Finish**.

Warning! Barcodes and human readable fields are not validated on the WYSIWYG screen. TEST print does not show your actual encoded data. You must go to a Loftware Label Manager printing application such as On-Demand or Range Printing to encode and validate your actual data.

The Loftware Label Manager allows you to extract data from a variety of sources, including external databases, to help you produce labels exactly the way you want them.

Note: Block Configuration data source for RFID fields and Keyboard data source, as it applies to RFID fields, are discussed in the RFID section.

Data Sources can be assigned to any variable field on the label including text, barcode and image fields. Data sources cannot be assigned to fixed text fields, and RFID field values can only be assigned using the Keyboard or the Block Configuration data source. In addition, while fields added to an RFID label, other than the RFID field represented by the antenna icon, can obtain values from the data sources described in this section, variable text fields added to an RFID tag can obtain their values only from the Keyboard data source.

This section explains how to get the most out of the Loftware Label Manager's data source functionality.

Field Type	Data Source
A keyboard (Data Entry) field	Keyboard
Character types allowed on input	Keyboard
A database key field with ODBC	Database-Key
Other database fields with ODBC	Database-Data
Database field referencing a file name that contains the data	Database-File
Database field referencing a serial number file to be used for this record	Database-Serial
Key fields for multiple databases	Database-Key
Standard date or time fields	Date/Time
Custom date or time field	Date/Time
Data from a text file	File
Fixed text input	Fixed
Math calculations	Formula
"Copy-from" other fields	Formula
Several fields combined together	Formula
Check digits or special functions	Formula
Combined calculations	Formula

Field Type	Data Source
Sub-strings copied from other fields	Formula
Paragraph text	Any Data Source
Serial Number Files	Serial Number
Formula for HIBC barcode	Formula
Formula using non-printing fields	Formula
Number increment or decrement	Data Source
Character set to use with incr/decr	Increment/Decrement
Increment or decrement and store result	Serial Number
Non-printing fields	Specify its Data Source, and then set its Printing Field property to No.
RFID fields	Block Configuration Keyboard
Variable Images from Database	Database-Data
GS1 Code 128 Barcode	GS1 Wizard
UPN Healthcare Barcodes	UPN Wizard
Value or visual properties of a field based on the result of an executed script	Script
ISBT barcode	Script
An image that does not change from label to label	Fixed-Image

With Data Sources, you can:

- Identify the source (for example database) from which the Loftware Label Manager obtains the data that is included on a label.
- Control what a user can enter on a label when preparing a print run using an On-Demand Print form.

Data sources can be defined for any variable field, text, barcode or image. The default data source for all fields other than image is Keyboard, which assumes direct user input for the data at print time, for example, a data entry station on the shop floor. The default data source for an image is Fixed.

Related Information
For more on data concepts, refer to the About Data Push section of the *Loftware Print Server User's Guide*.
For information on RFID fields, refer to the *RFID* section of this guide .

Accessing a Data Source

The Data Source is an important part of defining a label.

To access the **Data Source** dialog box:

- Select the field for which you want to define the data source.
- Right click the field and select **Edit Data Source** from the pop-up menu.
- Click the browse button (...) next to the **Data Source** property in the property box.

This displays the Data Source dialog box which lists available data sources. The right side contains the information to set up the selected data source. As you select different Data Sources, the information on the right side changes to display information specific to the selected Data Source.

Non-RFID Field Data Source List

- Keyboard (default)
- Databases (Key, Data, Serial and File)
- Date/Time
- File
- Fixed
- Formula
- Increment/Decrement
- Script
- Serial-Number

RFID Field Data Source List

- Keyboard
- Block Configuration

About Force Max # Chars

The **Force Max # Chars** option allows you to set the display, data entry, and printing behavior of label fields in cases where the value of a field exceeds the Max #Chars property for the field. You can select a behavior for each field on a label individually from the Data Source dialog box. You can also set a global Force Max # Chars setting preference for all fields.

Note: By default **Force Max # Chars** is set to **Do Not Force Max # Chars**. This may impact keyboard data entry for labels designed in or prior to version 9.6. For example, if you previously limited operators to entering 10 characters for a phone number, after upgrading to version 9.6, operators may now be able to enter 11 or more characters. To restore the Max # Chars enforcement on all fields, enable Force Max #Chars globally.

Force Max # Chars Settings

Setting	Description
Use Global Setting (Default)	The field will follow the global preference.
Force Max # Chars	The field will truncate to the setting for Max # Chars for the field.
Do Not Force Max # Chars	The field will display the full value entered or retrieved for the field.

To Set the Global Force Max # Chars Preference

1. Open the **Preferences** window: Select **Options** | **Preferences** or click F8.
2. Expand **Print Modules**, and then expand **All Print Modules**.
3. Select **Force Max # Chars**.
4. Click **OK**. You must restart Loftware Label Manager for the new setting to take effect.

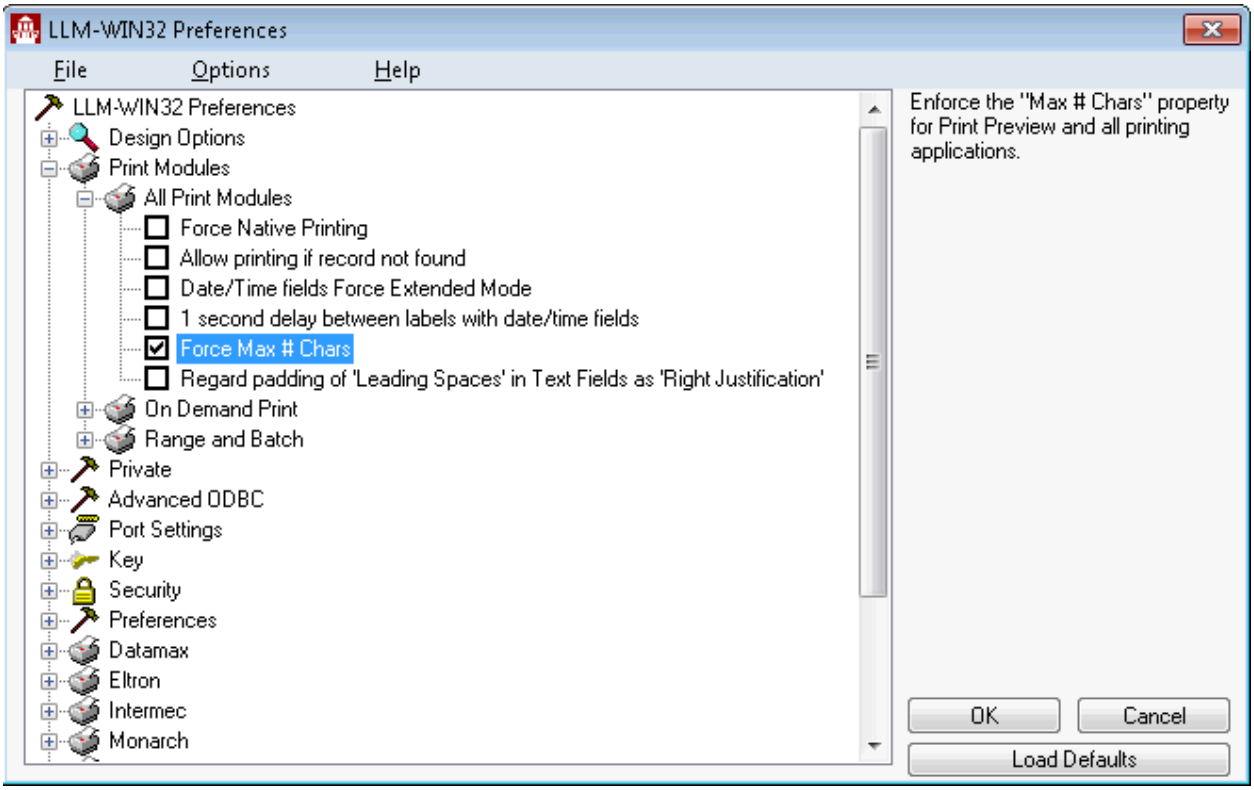


Figure 8.1: Force Max # Chars Setting

To Truncate Fields Per Their Max # Chars Setting

1. Select a field on a label.
2. Open the **Data Sources** window: Double click the setting for the property.

3. Select the setting from the **Force Max # Chars** field.
4. Click **OK**.

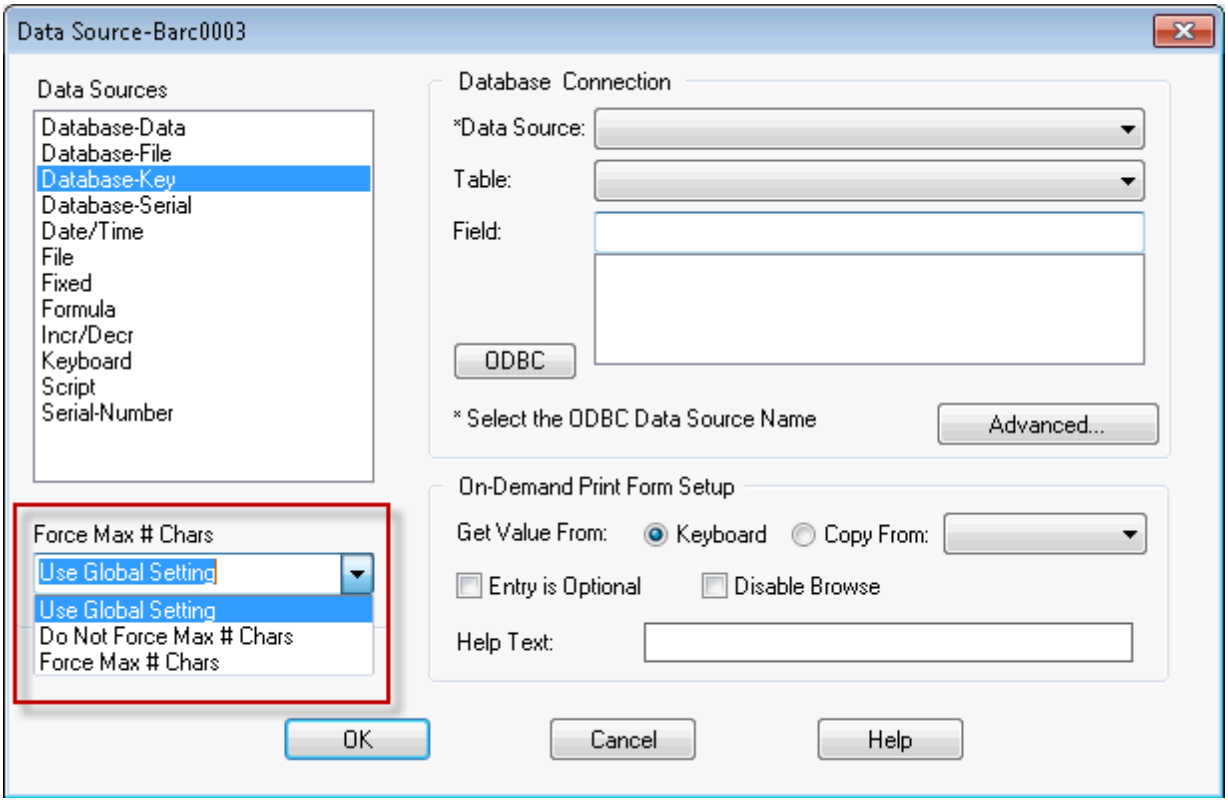


Figure 8.2: Force Max # Chars Field

Keyboard Data Source

The Keyboard data source is used for fields that get their data from the On-Demand Print Form, ActiveX Control, or the Loftware Print Server (LPS). For keyboard fields, you must define rules for the user to follow when entering data .

Note: For RFID fields using the Keyboard data source, data must be in hexadecimal format.

Options for Keyboard Data Source

Note: Some of the following parameters may not apply to LPS and ActiveX/.NET controls.

Entry Type

Define the entry as Optional, Must Fill or Mandatory.

Option	Description
Optional (default)	Allows the user to make an entry in the field or bypass the field.

Option	Description
Must-Fill	Requires the user to make an entry in the field that matches the maximum number of characters specified in the properties box for that field.
Mandatory	Requires the user to make an entry in the field but allows any number of characters up to and including the maximum number of characters specified in the properties box.

Update Method and Clear Value

The Update Method instructs the Loftware Label Manager what to do after a label is printed.

Option	Description
Clear (default)	Clears the field after a label is printed. The field is cleared to whatever is in the Clear Value field. By default, the field is cleared (set to blank), but you can assign a Clear Value (for example, you may want to have a Pack Quantity field clear to a standard pack quantity of 100). The Clear Value field is only active if the Update Method is set to Clear.
Remember	Retains the user input data for successive print runs of the same label. For example, if the packer number is displayed on a label and the same packer is responsible for several print runs of the same label, there is no need for the packer to re-enter Packer Number.
Remember Across Labels	Retains the user input data across successive print runs of the same or different labels. If the packer number is displayed on several different labels and the same packer is responsible for printing these labels over time, there is no need for the packer to re-enter Packer Number for each print run.

Remembering Data Across Labels

- Each label to be printed must have a field with the same name, for example, “Packer”.
- Assign a Keyboard data source for each field.
- Set the field as Remember Across Labels on each label format.

Character Mask and Custom Mask

Character Mask allows you to define or limit the types of characters the user may enter. Note that for RFID fields, the only choice is Hexadecimal.

Mask	Description
None (default)	Enter any keyboard character.
Alphanumeric	Enter upper or lower case alphabetical characters (A through Z, a through z) and numeric digits (0 through 9).

Mask	Description
Alpha Only	Enter upper or lower case alphabetical characters (A through Z, a through z) only.
Code 39	Enter characters in the Code 39 ASCII character set.
Code 93	Enter characters in the Code 93 character set.
Custom	Specify exactly which characters the user can enter in the Custom Mask field. Custom allows you to create your own character masks.
Full ASCII	Enter any character (in the Code 39 extended ASCII character set). See the ASCII-Code 39 Reference Table.
Hexadecimal	Enter hexadecimal digits (0 through 9, A through F) only. For RFID fields, this is the only accepted choice.
Numeric-Only	Enter numeric digits (0 through 9) only.
UCC	Enter numerals, spaces, or parentheses only. For building GS1-128 SSCC or GS1-128 Generic barcodes.
UCC-128	Enter numerals, spaces, parentheses, or alphabetic characters only. For building GS1-128 SSCC or GS1-128 generic barcodes.
Uppercase Alphanumeric	Enter uppercase alphabetical characters (A through Z) and numeric digits (0 through 9) only.
Uppercase Alpha-Only	Enter uppercase alphabetical characters (A through Z) only.

Custom Mask Examples

Custom masks are not available for RFID fields.

Example 1: (Custom Character Mask)

You have a production line field for which the valid values are 1, 2, 3 or 4. To create the appropriate character mask:

1. Select **Custom** as the Character Mask type.
2. Type "1234" in the Custom Mask field.

Example 2: (Custom Character Mask)

You want to let the user type a decimal point and a number anywhere in the field, for example 1.235 or 123.5. To create the appropriate Character Mask:

1. Select **Custom** as the Character Mask type.
2. Type "1234567890" in the **Custom Mask** field.

Be sure to enter a decimal point.

Note: The Custom Mask field is only active if the Character Mask is set to Custom.

Help Text - The Help Text field allows you to enter a customized prompt that is displayed in the Status Bar on On-Demand Print Form. This assists the user in data entry.

For Example

For a User ID field, you might want to add the following help text:

ENTER 4-digit employee ID number

Whenever the cursor is moved to this field in On-Demand printing, this customized help string is displayed in the status bar.

Block Configuration Data Source

The Block Configuration data source is used to specify values for RFID fields. It allows selection of RFID tag type, EPC/DoD/URI data structure and encoding type.

Related Information
Block Configuration data source for RFID fields and the fields available on the **Block Configuration** dialog are discussed in the *RFID* section of this guide.

Date and Time Data Source

The Date/Time data source allows entry of the print date and time on a label in a variety of formats.

Important: The print date and time reflect your computer system's current date and time at the time of printing, which is tracked by your system's internal clock/calendar. Thus, if you plan to print Expiration Date using the Date/Time function, you must calculate the expiration date based on the date the item is labeled and shipped. You may also use keyboard entries in a variable text field to enter any date desired on your labels.

Data Source Options

Date/Time data source fields have the following options:

Format Dates and Times

Select from a list of predefined Date/Time format options. As you choose a format, a sample date or time is shown in the sample field.

Custom Dates and Times

You can, if you wish, create your own custom Date/Time options or customize one of the predefined format options, using this key:

Key code	Description
d	day
ddd	day (for example Tues)

Key code	Description
dddd	day (for example Tuesday)
h	hour
mm	minute (or month)
mmm	month (for example Mar)
mmmm	month (for example March)
ss	second
yy	year
WW	week number (for example, Jan 1 through 7 = Week 01)
JJJ	day no. (Julian calendar, for example, Jan 1 = Day 001)
AM/PM	time AM or PM indicator is to print
Here are a few examples of the versatility of the Date/Time option:	
Custom Format ...	LLM prints the date and/or time as...
d-mmm	27-Mar
d-mmm-yy	27-Mar-00
ddmmyy	270300
h:mm:ss	3:01:03 PM
m/d/yy	3/27/00
h:mm "EST"	15:01 EST

Note: You can also add literal text to a format by enclosing text in quotation marks.

Single-Digit Date Formats

To set the single-digit option, in Design Mode, select Options | Preferences. Under the **Design Options** section, select one or more of the single digit date options. When a single-digit date option is enabled, any date over one digit is represented by the first letter of the alphabet, thus the 10^{th} month is represented by an A, the 11^{th} month B, the 15^{th} day F. See the following figure and table for examples.

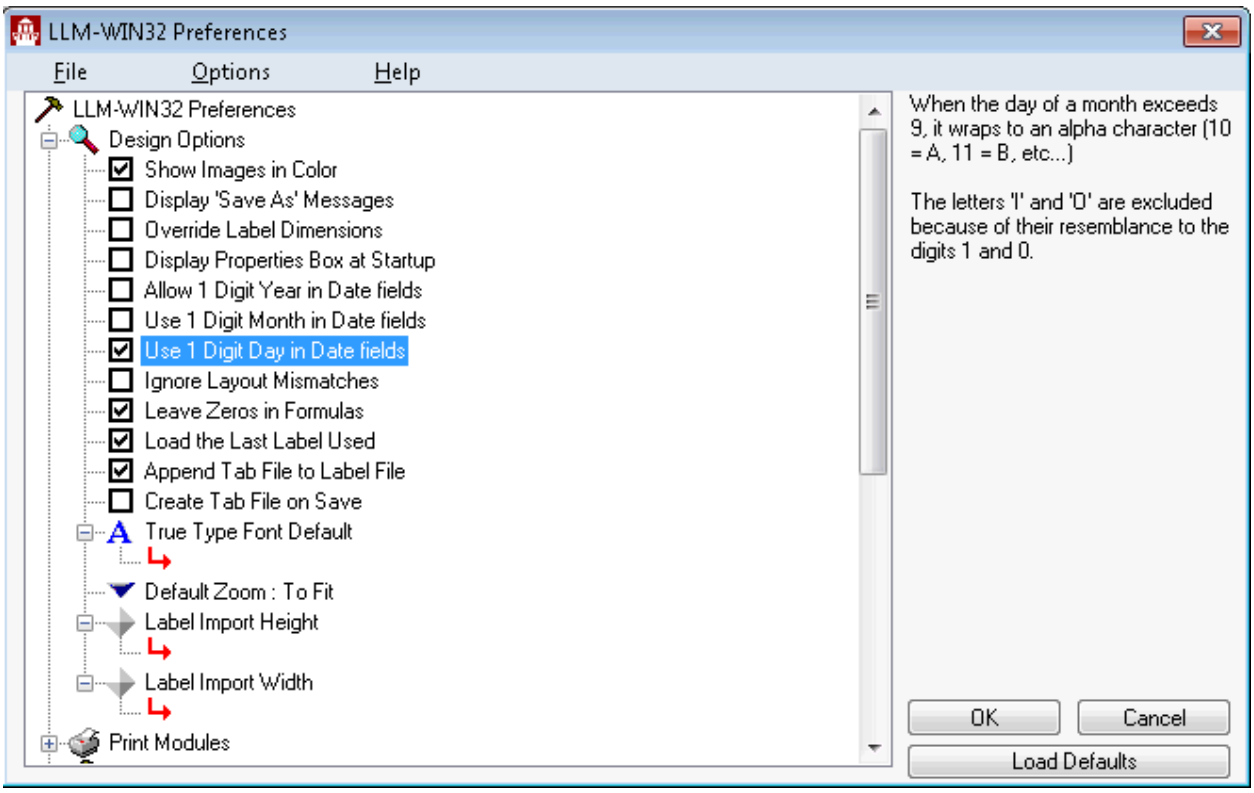

LLM-WIN32 Preferences
File
Options
Help
LLM-WIN32 Preferences
Design Options
Show Images in Color
Display 'Save As' Messages
Override Label Dimensions
Display Properties Box at Startup
Allow 1 Digit Year in Date fields
Use 1 Digit Month in Date fields
Use 1 Digit Day in Date fields
Ignore Layout Mismatches
Leave Zeros in Formulas
Load the Last Label Used
Append Tab File to Label File
Create Tab File on Save
True Type Font Default
Default Zoom : To Fit
Label Import Height
Label Import Width
Print Modules
When the day of a month exceeds 9, it wraps to an alpha character (10 = A, 11 = B, etc...)
The letters 'I' and 'O' are excluded because of their resemblance to the digits 1 and 0.
OK
Cancel
Load Defaults

Figure 8.3: Setting Single-digit Day, Month, Year

Custom Date String	Date...	Single Digit date
m/d/y	11/27/02	B / R / 2
y-m-d	99-12-31	9 - C - V
d_m_y	26_7_03	Q_7_3
mmm-d	Oct. 20	A-K

Add and Delete Buttons

If you want to add your custom format to the list of available formats for future use, click **Add**. This action adds the new entry to your list of formats. You can use the **Delete** to remove any of your custom formats. You cannot delete the predefined formats.

Calculate Expiration Date

If you require an expiration date calculation, enter number of days to be added after the date is retrieved from your system's internal clock. Please note that the day the label is printed should be the same day the item is shipped.

File Data Source

The File data source directs Loftware Label Manager to retrieve the data for the selected field from the specified text file. For example, if you prepare labels for pharmaceutical products, chemicals or hazardous substances, your labels may require Warning or Special Handling messages.

Using text files to store these warning messages allows you to update an external text file and have it reflected in the next print run without having to change every label that contains the message.

To use the File data source, type in the name of the text file to use or use the Browse button to search for the file. The File data source is used primarily for importing large amounts of data into a single field on your label.

The File data source works very well with paragraph fields since paragraphs can automatically wrap data to the next line. Two-dimensional barcodes are also examples of fields that may require a file data source.

Fixed Data Source

As implied by the name of the data source, the data is fixed - it remains the same across all labels. For text fields, using the Fixed data source with a variable text field is similar to using the Fixed Text Tool. For barcodes and images, using the Fixed data source is the only way to the field's data fixed. To use the Fixed data source, type in the text to use for the field data. Fixed data does not show up on the On-Demand Print Form, but will show up on the printed label.

Note: UTF-8 data input is supported for fixed fields.

Formula Data Source

The Formula data source is one of the most powerful and versatile features of LLM. Using formulas, you can:

- Perform math operations and print the result on the label
- Copy data from another field and incorporate it into the selected field
- Combine data from two or more fields using the combine operator "&"
- Create special field setups, such as Code 128 functions or special check-digit capability)
- Use the quantity of labels printed as data to create n of m labels (For example, 1 of 20, 2 of 20 where the value is the quantity of labels entered by the user). See Knowledge Base article 2009276.
- Perform string manipulations (For example: left, Part_Number, 10) extracts the first 10 characters of the data in the Part_Number field)
- Combine any or all of the above functions in a single field

- Use formulas that use the results of other formulas. Loftware Label Manager automatically calculates all dependent fields first.

Loftware Label Manager uses spreadsheet-like syntax for its formulas. If you are an experienced spreadsheet user, you can type formulas in manually. However, to make it easier to use Loftware Label Manager's formulas, the Formula data source dialog box has a Formula Assistant.

This section provides a general overview of how to take advantage of Loftware Label Manager formula features. It is useful to experiment and practice with your own formula combinations to discover the functions that work best for your own applications.

The Importance of Meaningful Field Names

Giving your fields a meaningful name makes it easier to work with formulas.

Example1

The formula (Gross_Weight – Tare Weight) / Piece_Weight is much easier to understand than (TXT0000 – BAR0001) / BAR0002.

Example2

Building a complete name string out of three input fields is easier to read as: FirstName & " " & Middle Initial & " " & LastName

Creating a Formula

Loftware Label Manager provides two basic methods for creating formulas:

- Type the formula directly into a text box. This is similar to typing a formula into a spreadsheet.
- Use Loftware Label Manager's Formula Assistant capability. This allows you to build your formulas from lists of field names, operations (for example, mathematical calculations) and functions.

You can also combine both methods when creating a formula.

Using the Formula Assistant

The Formula Assistant consists of three columns:

- Fields: A list of all of the variable fields on the label that you can include in the formula. Any non-printing fields that you may have dropped on the custom operator input screen also show up in this list.
- Operations: The mathematical operators and string functions you use in conjunction with fields.
- Functions: A list of special barcode functions, check digits and system values.

Using the Formula Assistant, you can build a formula by pointing and clicking on Field Names, Operations and Functions.

Mathematically adding Two Fields Together

1. In the list of Fields, click the name of the first field you wish to include in the formula.

   Note: The field name is displayed in the formula edit box.

2. In the list of Operations, click the plus button (+). (It is displayed in the text box, following the name of the first field.)
3. Return to the list of Fields and click the next field that you wish to include in the formula.

You can use point-and-click methods to create virtually any combination of fields and calculation for a formula.

Note: Loftware Label Manager does not require you to use point-and-click techniques to create formulas. If you wish, type your formulas directly into the text box using regular keystrokes.

Formula Examples

The following table provides four examples of Loftware Label Manager's Formula Assistant capabilities:

Operation	Procedure	Example
Combine text from two or more fields	Select each field by name and separate field names with the Combine operator (&).	FirstName & " " & LastName
Perform basic mathematical functions	Select each field by name, separated by functions using values from the appropriate mathematical symbol selected fields. (*, -,+, /). Use parenthesis to override normal math precedence.	(GrossWeight - TareWeight) / PieceWeight
Copy data from another field	Enter the field name of the field you want to copy from in the formula.	Copy from the PackType field. Example: PackType
Copy part of another field	Use the LEFT(), MID() or RIGHT() string functions.	LEFT (Description, 10) = Copy from the first 10 characters of the Description field.

The Formula Assistant's Operators and Functions

Loftware Label Manager uses standard spreadsheet-type operators and string functions.

Mathematical Operators

Operators	Description
*	Multiplies the values of two selected fields.
/	Divides one field by another.

Operators	Description
+	Adds the values of two selected fields.
-	Subtracts the value of a field from the value of the previous field.
( )	Parenthesis is used to override normal math precedence.

String Functions

Function	Description
Combine (&)	Concatenates the values of two strings or fields of data. Syntax: "fixed_string" & field_name or field_name & "fixed_string" Example: Concatenate a text field TXT001 with a fixed string "1234". TXT001 & "1234"
Copy-From	Copies the contents of one field into a secondary destination field. Syntax: CopyFrom(fieldname) Example: Copy the contents of field BAR001.CopyFrom (BAR001)
Fixed String	Inserts a fixed string of characters within a formula. (Is displayed in text field as " ".) Syntax: "fixed string" Example: Create a fixed string with the characters "Loftware" "Loftware"
Left-Pad	Pads stated character onto the beginning (or leftmost side) of the field. Syntax: lpad ('pad_char', max_width, fieldname) pad_char: character to be padded into printed field max_width: maximum total size of field to print including padded characters fieldname: the field to extract data from Example: Pad the character L onto the leftmost side of the field TEXT0000, making the printed field eight characters long. LPAD('L',8,Text0000)

Function	Description
Left-String	Returns the first (or leftmost) character or characters from the selected field. Syntax: left(fieldname, num-chars) fieldname: the field to extract data from num-chars: the number of characters to copy Example: Returns the first (or leftmost) four characters from the selected field TEXT0003. LEFT(Text0003,4)
Left-Trim	Removes stated characters from the beginning (or left most side) of the field. Syntax: ltrim('trim character',fieldname) trim_char: character to be trimmed from field fieldname: the field to extract data from. Example: Removes all consecutive occurrences of the character N from the leftmost side of the field TEXT0002. LTRIM('N',Text0002)
Mid-String	Returns a specific number of characters from the selected field, starting at the position you specify. Syntax: mid(fieldname, start_pos, length) fieldname: the field to extract data from start_pos: is the position of the first character you want to extract. The first character in a field has tart_pos 1 and so on. length: the number of characters to copy. Example: Extract 10 characters from the Description field, starting at the fifth character. MID(Description, 5, 10)
Parenthesis	Inserts a set of parentheses into the formula. You can move the cursor inside the parenthesis to enter more operations into the parenthesis. Note the text cursor auto positions inside the parenthesis.
Right-Pad	Pads stated character onto the end (or rightmost side) of the field. Syntax: rpad ('pad-char',max-width, fieldname) pad_char: character to be padded into printed field max_width: maximum total size of field to print including padded characters fieldname: the field to extract data from

Function	Description
Right-String	Returns the last (or right most) character or characters from the selected field right (the field to extract data from, the number of characters to copy) Syntax: right (fieldname, num-chars). fieldname: the field to extract data from num-chars: the number of characters to copy. Example: Returns the last (or right most) three characters from the selected field TEXT0004. RIGHT (Text0004,3)
Right-Trim	Removes stated characters from the end (or rightmost side) of the field. Syntax: rtrim('trim character',fieldname) trim_char: character to be trimmed from field fieldname: the field to extract data from Example: Removes all consecutive occurrences of the character 1 from the rightmost side of the field TEXT0003. RTRIM('1',Text0003)

Special Functions

Loftware Label Manager contains some special functions for advanced applications.

Function	Description
ASCII BEL	Inserts an alert (bell) character (an audible signal)
ASCII CR	Inserts a carriage return (Decimal and Hex values)
ASCII CRLF	Inserts a carriage return line feed (Decimal and Hex values)
ASCII EOT	Inserts an end of transmission (Decimal and Hex values)
ASCII FF	Inserts a form feed
ASCII FS	Inserts a file separator character, common in Maxi-Code (Decimal and Hex values)
ASCII GS	Inserts a group separator character, common in Maxi-Code (Decimal and Hex values)
ASCII HT	Inserts a tab character (Decimal and Hex values)
ASCII LF	Inserts a line feed (Decimal and Hex values)
ASCII RS	Inserts a record separator character
ASCII SO	Inserts a Shift Out character to extend the graphic character set
Code128: Code A	Upper alpha, numeric and ASCII function calls.

Function	Description
Code128: Code B	Upper and lower case alphanumeric.
Code128: Code C	Numeric only
Code128: Code UCC	Makes a standard Code 128 barcode with a Subset C and Function 1.
Code 128: Shift	Inserts a Code 128 Shift character for switching subsets
Composite Delimiter	Inserts a character that separates the composite data portion
Duplicates	The field uses the number of duplicate labels to be printed, entered at print time, as its data.
FNC1	Inserts a Function 1 character into the barcode.
FNC2	Inserts a Function 2 character into the barcode.
FNC3	Inserts a Function 3 character into the barcode.
FNC4	Inserts a Function 4 character into the barcode.
Link check character	Inserts a Link check character into the barcode. Both the HIBC LIC Standard data structures and the HIBC UCC/EAN Primary field employ a Link Character for additional data security
Mod10	Inserts a Modulus 10 check character based on all of the preceding digits in the field.
Mod43	Inserts a Modulus 43 check character based on all of the preceding characters in the field.
Mod7	Inserts a Modulus 7 check character based on all of the preceding digits in the field.
Quantity of Labels	The field uses the number of labels to be printed, entered at print time, as its data. Example: In conjunction with an incrementing field, you can use this feature to build a label counter (For example, 1 of 5, 2 of 5) where the "of" count automatically matches the number of labels printed.
UCCMod10	Inserts a Modulus 10 check character based on the preceding digits, back to, but not including, the Application Identifier. Using this function allows multiple UCC128 data fields to be combined in a single barcode.
Examples	
A field has the data: (00) 00100 28028 99999999 & UCCMOD10()	The first UCCMOD10() function calculates a Mod 10 Check Digit for the data back to but not including the (00).
(01) 9323403 & UCCMOD10()	The second UCCMOD10() function calculates a Mod 10 Check Digit for the data back to but not including the (01).

Function	Description
*Inserts the specified Code 128 function into a barcode field. Text fields ignore this function. The function commands behave differently for different printers. Consult Loftware Label Manager Online Help for specific information pertaining to your printer and examples of different Code 128 applications.	

Other Formula Examples

The following example shows the power of formulas in setting up a complex HIBC barcode.

In practice, it may help you to use the UPN Healthcare Barcode Wizard. The Wizard builds the formula for you as it guides you through the specification.

Related Information
For information on Wizards if you are using GM, UPN, HIBC or GS1 barcodes, refer to Templates and Wizards in this guide.

Creating an Application Using HIBC Barcodes

Using the Loftware Label Manager Formula data source enables you to build complex label formats such as those used in HIBC (Health Industry Business Communications Council) applications.

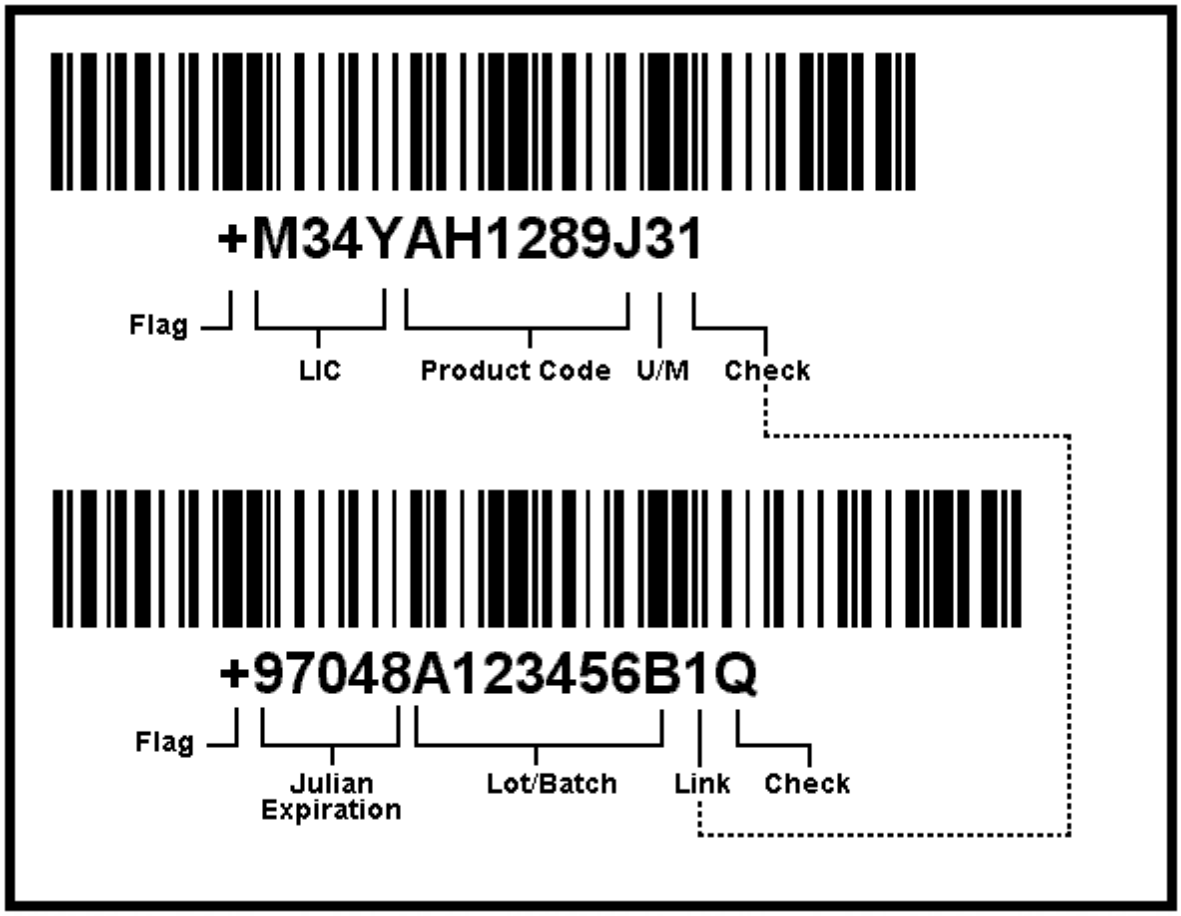


Figure 8.4: HIBC Label with Primary and Secondary Barcodes

In the previous example, the label format contains two barcodes that are linked by a check digit character. These barcodes can be set up as either Code 39 or Code 128 symbology. These example labels (HIBC_128.LWT and HIBC_39.LWT) are provided in the Loftware Label Manager general template directories. To use this feature:

1. Set up the CheckDigitManually options in the parameter file (Preferences instructions) LLMWDN32 Configuration file (Start | All Programs | Loftware Labeling | System Folders | Configuration). This forces the check digit to be calculated by Loftware instead of the printer.
2. Create a variable barcode named PRIMARY. This is your primary barcode. The primary barcode must be long enough to hold your Labeler Identification Code (LIC), your Product Code and your Unit of Measure.
3. Create a variable barcode named SECONDARY. This is your secondary barcode. The secondary barcode must be long enough to hold your Expiration and Lot/Batch information.

Related Information
For more information about creating variable fields and variable non-printing fields, refer to the *Designing Labels* and *On-Demand Printing* sections of this guide.

Creating HIBC Formulas

The following are the formulas for the example label's primary and secondary HIBC barcodes.

Primary Barcode (PRIMARY)

"+M34YAH1289J3"& MOD43()

Characters	Description
"+M34YAH1289J3"	Is a fixed string containing your information. (This data could be taken from variable field using a non-printing field.)
mod43()	Calculates the modulus 43 checkdigit for the primary barcode.

Secondary Barcode (SECONDARY)

"+97048A123456B"& right(PRIMARY,1) & MOD43()

Characters	Description
"+97048A123456B"	Is a fixed string containing your information. (This could be taken from a variable field using a non-printing field).
right(PRIMARY,1)	Takes the rightmost character of PRIMARY (which is the check digit) and adds it to SECONDARY. You can access this string function by double-clicking the "right-string" function.
mod43()	Calculates the modulus 43 checkdigit for this barcode (the secondary barcode).

Increment/Decrement Data Source

The Increment/Decrement (Incr/Decr) data source allows you to print increasing or decreasing values in a field (Increments or Decrements). The starting value for each print run is entered by the user at print time or it is set using a clear-to value. The difference between the Incr/Decr data source and the Serial Number data source is that the Serial Number data source remembers the last value printed in a file. This value can be shared among different labels. Serial files can also be shared system wide across a network. Be sure that you understand both data sources before choosing one.

Extended Mode vs. Native Mode

Most thermal transfer printers have the capability of incrementing or decrementing data in the printer's firmware. This allows the printers to print much faster than having to send a different label (with the incremented value) each time a field has to be incremented. The Loftware Label Manager design mode allows you to set up any incrementing situation you need. For example, the incrementing scheme may be alphanumeric or may be embedded in a formula.

The printing subsystem evaluates the nature of your increment/decrement request to see if the printer is able to handle it internally. If the answer is yes, the job is sent to the printer and the printer is told to increment between labels. This scenario is called Native Mode. If it is determined that the printer cannot handle the request, the printing subsystem performs the incrementing for the printer and sends the new data for each label. This is called Extended Mode and is slower than Native Mode.

> **Rule of Thumb:** If a formula is a copy-from field and is incr/decr or serial, it is printed natively. If you have a formula which is concatenated with an incr/decr or serial field, it is printed in Extended Mode.

When the Number Wraps

You should provide enough zeros during your print run so that the incrementing number increments through significant digit positions before resetting to zero. For example, a starting number of 00 increments through 99 before wrapping back to 00. A starting value of 000 wraps at 999 and so on. You may trim the leading 0 using the L-Trim formula function on a non-printing field that you have defined as incrementing.

> **Note:** Using the L-Trim formula function may force the printer into the slower Extended Mode.

Options for the Increment/Decrement Data Source

Type

Type allows you to select Increment (count up) or Decrement (count down).

Mode

This function allows you to specify the character set used to Increment or Decrement.

Mode Options	Behavior
Numeric-Only (default)	Increments/Decrements an integer counter. Example: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ...
Uppercase Alphanumeric	Increments/Decrements an alphanumeric counter. Example 1: AA8, AA9, AAA, AAB... Example 2: AZX, AZY, AZZ, B00, B01, B02...
Uppercase Alpha-Only	Increments/Decrements an alpha-only counter. Example 1: AAA, AAB, AAC, AAD, ... Example 2: AZX, AZY, AZZ, BAA, BAB, BAC...
Hexadecimal	Increments/Decrements a hexadecimal counter Example 1: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10, 11, 12..
Custom	Specifies exactly which characters to use in the increment / decrement sequence.

Custom Sequence

If you choose to create a Custom increment/decrement sequence, you must enter the allowed characters in the **Custom Sequence** field.

Example

(Custom Inc/Dec Definition)

If you want to feature an alphanumeric field without the letters I, O, S and Z (to avoid possible confusion with the numerals 1, 0 and 5). Select Custom; type in the desired custom sequence in the Custom Sequence text box:

```
0123456789ABCDEFGHJKLMNPQRTUVWXY
```

(The above example eliminates I, O, S and Z).

By Value

Sets the interval by which the field increments or decrements at print time.

Update Method and Clear Value

The **Update Method** instructs Loftware Label Manager what to do after a label is printed.

Option	Behavior
Clear (default)	Clears the field after a label is printed. The field is cleared to whatever is in the Clear Value field. By default, the field is cleared (set to blank"), but you can assign a Clear Value later in the dialog box. The Clear Value field is only active if the Update Method is set to Clear. **Example** Create a box counter (1 of x, 2 of x) that always starts at 1. Use the Clear update method and set the Clear Value to 1.

Option	Behavior
Update to Next Value	Sets the field to the next available value in the sequence. Use this option to create a continuing series of labels.
Reset to Original Value	Resets the counter to the starting value entered by the user.

Help Text (Inc/Dec)

The **Help Text** field allows you to enter a custom prompt that is displayed in the Status Bar at the bottom of an On-Demand Print Form to assist the user in data entry.

Serial Number Data Source

If Serial Numbers are an integral part of your company's operation, please read the following:

Most thermal transfer printers have the capability of serializing data in the printer's firmware. This allows the printers to print much faster than having to send a different label request (with the incremented value) each time a field has to be incremented. The Loftware Label Manager Design mode allows you to set up many serial number schemes. For example, the serialization scheme may be alphanumeric, or may be embedded in a formula. The printing subsystem evaluates the nature of your serial number request to see if the printer can handle it internally. If the answer is yes, the job is sent to the printer and the printer is told to increment between labels. This scenario is called Native Mode. If it is determined that the printer is not able to handle the request, the printing subsystem must perform the incrementing for the printer and send the new data for each label. This is called Extended Mode and is significantly slower than Native Mode.

The Serial Number option is similar to the Increment/Decrement option, but the serial number offers these additional features:

- Serial numbers are stored in files and remembered from one print session to another.
- Serial numbers when used in conjunction with the LPS are never repeated; however, if a job does not print or is restarted, the serial numbers that did not print are skipped.

Example

Serial number starting at 000. If 50 labels are printed and the job is restarted after 25 labels, the LPS restarts printing with serial number 076.

- Serial numbers can be attached to more than one label, i.e., several labels can share a common sequence.
- Serial numbers can be local; specific to the computer that is being used to print labels or shared by multiple users on a network.

- Serial file names may be specified in a database so that you can select which Serial file pertains to which part number.

Related Information
Read and understand the *Extended vs. Native Mode* and *When the Number Wraps* sections from the Increment/Decrement data source. This information applies to Serial data sources as well.

Create a Serial Number File: Example

Assume that you are labeling cartons of Router Blades, and you have two types of customers to whom you must ship the blades: Wholesalers and Retailers. Your wholesalers and retailers require two completely different labels, but you want the product serial numbers (production lot number) to appear sequentially, regardless of which label you are printing. Follow these steps:

1. Create a serial number file containing the router blade production lot number, call it ROUTER.
2. Design the wholesaler label and attach it to the ROUTER serial number.
3. Design the retail label and attach it to the ROUTER serial number.

You assign the same serial number file to each label and Loftware Label Manager begins each print run with the next available value regardless of how many print runs occur and how many different labels use this serial number.

Creating a Serial Number File

You should provide enough leading zeros when setting your serial number file up so that the incrementing number increments through significant digit positions before resetting to zero. For example, a starting number of 00 increments through 99 before wrapping back to 00. A starting value of 000 wraps at 999 and so on. You may trim the leading 0 using the L-Trim formula function on a non-printing field that you have defined as incrementing.

Note: Using the L-Trim formula function may force the printer into the slower extended mode.

1. Select the field on a label that is attached to the Serial Number file.
2. Edit the Data Source; select the Serial-Number data source.
3. In the Serial File section, click **New**. The **Serial Number File** window opens.
4. Enter a **File Name** for the Serial Number file (for example FORD).
5. Tab to the **Description** field and type a brief description of the file.
6. Specify the **Type**, **Mode**, **Custom Sequence** (if applicable) and **By Value**. These attributes are the same for the Incr/Decr fields.
7. Set the **Length** of the serial number.
8. Enter a **Start Value**, and then click **OK**.

Note: If you need to create more than one Serial File, follow this procedure multiple times.

Changing an Existing Serial Number File

1. Select the field on a label that is attached to the Serial Number file.
2. Edit the Data Source.
3. Select the Serial Number data source.
4. Select the Serial Number you wish to change, click **Edit**.
5. Change the serial number setup as desired, click **OK**.

> **Warning!** Changing an existing serial number file affects any subsequent printing for all labels which reference that serial number. Changes to serial number definitions should be done with extreme caution. Also, the Loftware Sample Serial Files are samples only, and are not intended for a production label. Problems when upgrading can occur if they are used in a production environment.

If you are moving your Loftware Label Manager installation from one computer to another, make sure to either move the serial file or set up the serial number file on the new computer.

Options for the Serial Number Source

Display on Form (Serial #)

Check this option if you want the field displayed on the On-Demand Print Form. The current value of the serial number file is displayed on the On-Demand Print Form but cannot be changed.

> **Note:** If several users are centrally sharing a serial number using a network, the current value of the serial number may change before labels are printed (if another user prints labels after the label is loaded but before it is printed). If this happens, the user is notified that the starting value has changed.

Help Text (Serial #)

The Help Text field allows you to enter a customized prompt that is displayed in the Status Bar on the On-Demand Print Form. This assists the user in data entry.

Script Data Source

With the Script data source, you can specify the data value or alter the visual properties of a field based on the result of an executed JavaScript.

The Script data source can be used for Variable Text, Paragraph, Barcode, and Image fields. It is not currently supported for RFID fields.

> **Note:** Loftware does not support changing fixed images via a script.

Considerations

- Only one script is allowed on a label - Because the value of a scripted field can depend on the values of other fields on the label, it is necessary to first resolve the values of fields that a scripted field is dependent on.

- Layouts are not supported.
- While Design allows different unit setting options, the Script data source only supports field positions set in inches.
- Changing the Human Readable property to / from **Free floating**, **Fixed below**, or **None** is not currently supported using scripts.

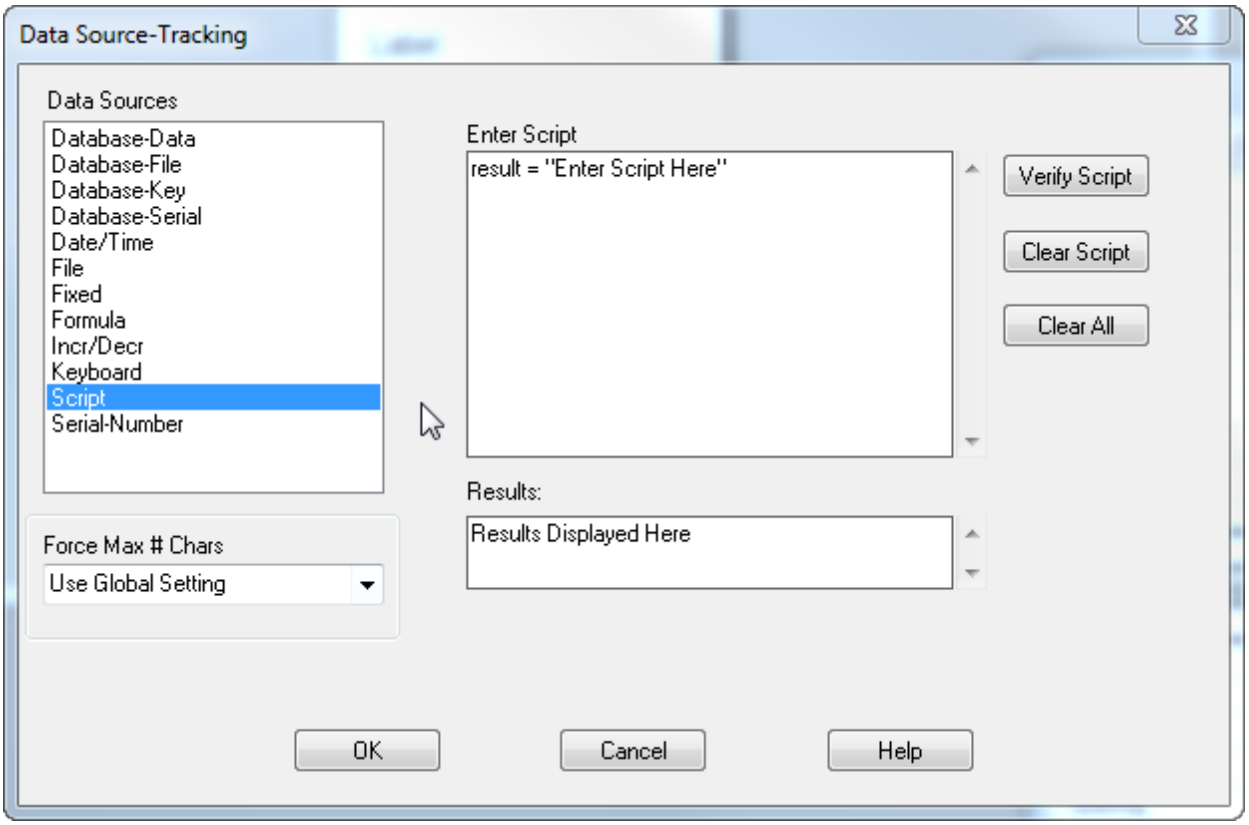


Figure 8.5: Data Source Window Using Script Source

Syntax

JavaScript is the scripting language currently supported by the Script data source. The JavaScript engine utilized for LLM's Script data source conforms to ECMA-262 Edition 5 specification

A script can be used to

- Change field properties such as font, bold, size, inverse, printing field based upon data included in the data stream, database fields on the label or data sources. For example, the script may specify that the font size of a field be changed based on the number of characters supplied.
- Perform logical (if then else), mathematical, and Boolean logic on data elements included in the data stream, database fields on the label and/or data sources.
- Use fields, operations, and functions also supported by the Formula data source.

Note: While the JavaScript environment provides some functionality similar to the Formula data source, the syntax is not exactly the same.

Accessing a Label Field

In order to specify or change the value or properties of a label field, you must be able to access the field. The following syntax is used to access the desired fields and properties on a label:

```
label.fields.field.(@name == 'xxxxxxxx').@posLeft = 3.0;
```

where 'xxxxxxxx' is the name of the field on which the script will be applied. Field, font, and barcode properties must be preceded by the at sign (@), as shown in the example above. This script will set the left position of the label field 'xxxxxxxx' to 3 inches.

There are field, font, and barcode properties that can be accessed and modified, and there are also field, font, and barcode properties that can be accessed but not modified.

Note: Case and punctuation are significant. Keywords must be lower case. The use of parentheses, quotation marks, and semicolons is governed by the ECMAScript specification.

Keywords

The following keywords are used to access the label fields. Keywords must be lower case and use the dot notation as shown in the examples provided below.

- label
- fields
- field
- font
- barcode

Field Properties

Field properties must be preceded by the at sign (@).

The following is a list of the available field properties and corresponding values. These are the properties that can be modified by the script:

Field properties that can be modified by the script	
data	String value enclosed with quotation marks (“my data”)
posLeft	Floating point value
posTop	Floating point value
padding	“none”, “leadingZeros”, “leadingSpaces”, trailingSpaces”, “centerWithSpaces”
rotation	“0”, “90”, “180”, “270”

Field properties that can be modified by the script	
printingField	“true”, “false”

The following field properties are used to reference the field, but cannot be modified by the script. With the exception of name, modifications to these properties will be ignored.

Field properties that cannot be modified by the script	
name	String value enclosed with quotation marks ("fieldname")
prompt	String value enclosed with quotation marks (“fieldPrompt”)
type	"label", "text", "line", "box", "image", "paragraph", "RFID", "barcode", "block"
length	Integer value
width	Floating point value
height	Floating point value

Examples of Field Properties Modified by Scripts

Change the left position of Field_A to 3 inches

```
label.fields.field.(@name == 'Field_A').@posLeft = 3.0;
```

Change the top position of Field_A to 2 inches

```
label.fields.field.(@name == 'Field_A').@posTop = 2.0;
```

Change the padding of Field_A to leading zeros

```
label.fields.field.(@name == 'Field_A').@padding = "leadingZeros";
```

Change the padding of Field_A to leading spaces

```
label.fields.field.(@name == 'Field_A').@padding = "leadingSpaces";
```

Change the padding of Field_A to trailing spaces

```
label.fields.field.(@name == 'Field_A').@padding = "trailingSpaces";
```

Change the padding of Field_A to centered with spaces

```
label.fields.field.(@name == 'Field_A').@padding = "centerWithSpaces";
```

Turn off padding for Field_A

```
label.fields.field.(@name == 'Field_A').@padding = "none";
```

Change the rotation of Field_A to 90 degrees

```
label.fields.field.(@name == 'Field_A').@rotation = "90";
```

Change the rotation of Field_A to 180 degrees

```
label.fields.field.(@name == 'Field_A').@rotation = "180";
```

Change the rotation of Field_A to 270 degrees

```
label.fields.field.(@name == 'Field_A').@rotation = "270";
```

Change the rotation of Field_A to 0 degrees

```
label.fields.field.(@name == 'Field_A').@rotation = "0";
```

Change the contents of Field_B to "CHANGED"

```
label.fields.field.(@name == 'Field_B').@data = "CHANGED";
```

Font Properties

Font properties must be preceded by the at sign (@).

The following is a list of the available font properties and corresponding values. These are the properties that can be modified by the script.

Font properties that can be modified by the script	
bold	“true”, “false”
inverse	“true”, “false”
italic	“true”, “false”
spacing	"proportional", "mono"
strikeout	“true”, “false”
underline	“true”, “false”
charRotate	“true”, “false”
Additional font properties	
pointSize	Integer value
charHeight	Floating point value
charWidth	Floating point value
magHeight	Integer value
magWidth	Integer value
height	Floating point value

Note: Not all the additional font properties listed above are supported by all printers and fonts.

The following is a sample of the font types and additional properties supported, and describes the order that the additional properties will be processed for the different font types:

Point Font

For example: Avery 6404, Native Font - Scalable Times Roman. Additional properties supported:

- pointSize
- height

Dot Font

For example: Datamax Prodigy Max, Native Font “12x18”. Additional properties supported:

- magHeight
- magWidth

TrueType Font

For example: Zebra 140xIII TrueType Fonts, Courier New, and Arial. Additional properties supported:

- magHeight
- magWidth
- pointSize

Flexi Font

For example: Zebra 105 Native Fonts - Scaleable. Additional properties supported:

- charHeight
- charWidth
- pointSize

Hybrid Font

For example: Datamax I-4206 Native Fonts - Smooth. Additional properties supported:

- height
- magHeight
- magWidth
- pointSize

Barcode Properties

Barcode properties must be preceded by the at sign (@).

Consider the following when modifying barcode properties with a script.

- Properties that are available for a barcode depend on the selected symbology and printer. These are displayed below the bold line in the **Properties** box for the selected barcode symbology (the value just above the bold line).
- Some properties are dependent on other properties for their values. For example, if you change the line Width (barLineWindth) property on a barcode, the X-Dimension value and % Nominal value (if available) change automatically.
- The “% Nominal” property is available for some barcode symbologies. For example, the EAN and UPC series.

- Some printers can only print values that fall within a specified range. For example, 37%, 75%, 113%, 150% of nominal.

The following table lists barcode properties that can be modified by a script:

Barcode properties that can be modified by the script	
barHeight	Integer value
barRatio	String value (“2.0:1” ¸”2.25:1” , “2.3:1” , “2.5:1” ,” 2.7:1”, “3.0:1”)
barLineXDim	Floating point value (004.9, 009.8, 014, 7)
barLineWidth	Integer value
barPercentNominal	String value (75, 113, 150)

Note: For barcodes that support the Ratio property, if the string value specified in the script for barRatio does not match any of the values shown above, the default of “3.0:1” is used.

ASCII Characters in Scripts

You can insert Lower ASCII characters into a script by using an escape sequence around the hexadecimal value of the ASCII character. In this context, lower ASCII is the first 31 characters of the ASCII character set.

Note: Loftware converts Upper ASCII characters, so they can be included in a script without the escape sequence.

- `#x` - start sequence
- `;` - end the sequence

For example

```
#x08;
```

This sequence would send the **Backspace** character.

Lower ASCII Character Set

Character	Description	Decimal	Hexadecimal
NUL	Null Character	0	0
SOH	Start of Header	1	1
STX	Start of Text	2	2
ETX	End of Text	3	3
EOT	End of Transmission	4	4
ENQ	Enquiry	5	5
ACK	Acknowledgement	6	6

Character	Description	Decimal	Hexadecimal
BEL	Bell	7	7
BS	Backspace	8	8
HT	Horizontal Tab	9	9
LF	Line Feed	10	A
VT	Vertical Tab	11	B
FF	Form Feed	12	C
CR	Carriage Return	13	D
SO	Shift Out	14	E
SI	Shift In	15	F
DLE	Data Link Escape	16	10
DC1	Device Control 1 (XON)	17	11
DC2	Device Control 2	18	12
DC3	Device Control 3 (XOFF)	19	13
DC4	Device Control 4	20	14
NAK	Negative Acknowledgement	21	15
SYN	Synchronous Idle	22	16
ETB	End of Transmission Block	23	17
CAN	Cancel	24	18
EM	End of Medium	25	19
SUB	Substitute	26	1A
ESC	Escape	27	1B
FS	File Separator	28	1C
GS	Group Separator	29	1D
RS	Record Separator	30	1E
US	Unit Separator	31	1F

Creating a Script Data Source For a Field

1. Add a field to the label, and open the **Data Source** configuration window using one of the following methods.
   - Double click on the field.
   - Right click on the field, and select **Edit Data Source**.

- From the **Properties** box, select the Data Source property, and click the browse button.

2. Select **Script** from the **Data Sources** field.
3. Create the script by typing it in the **Enter Script** field. You can also copy and paste an existing script into the field.
4. Click **OK** to save the script.

Note: See the Scripting section of the Loftware Knowledge Base for some specific examples of how to use scripts on a label.

Verify a Script

You can test the syntax of your script.

- After entering a script, click **Verify Script**. The result of the verification appears in the **Results** field.

The possible results are SUCCESS or FAILURE.

If the syntax is correct, the **Results** field will display "Script verification completed successfully."

If the syntax is invalid, the Results field will display the first error encountered

For example

Line 2: ReferenceError: x is not defined"

Clear a Script

You can clear the text from the **Enter Script** and **Results** fields.

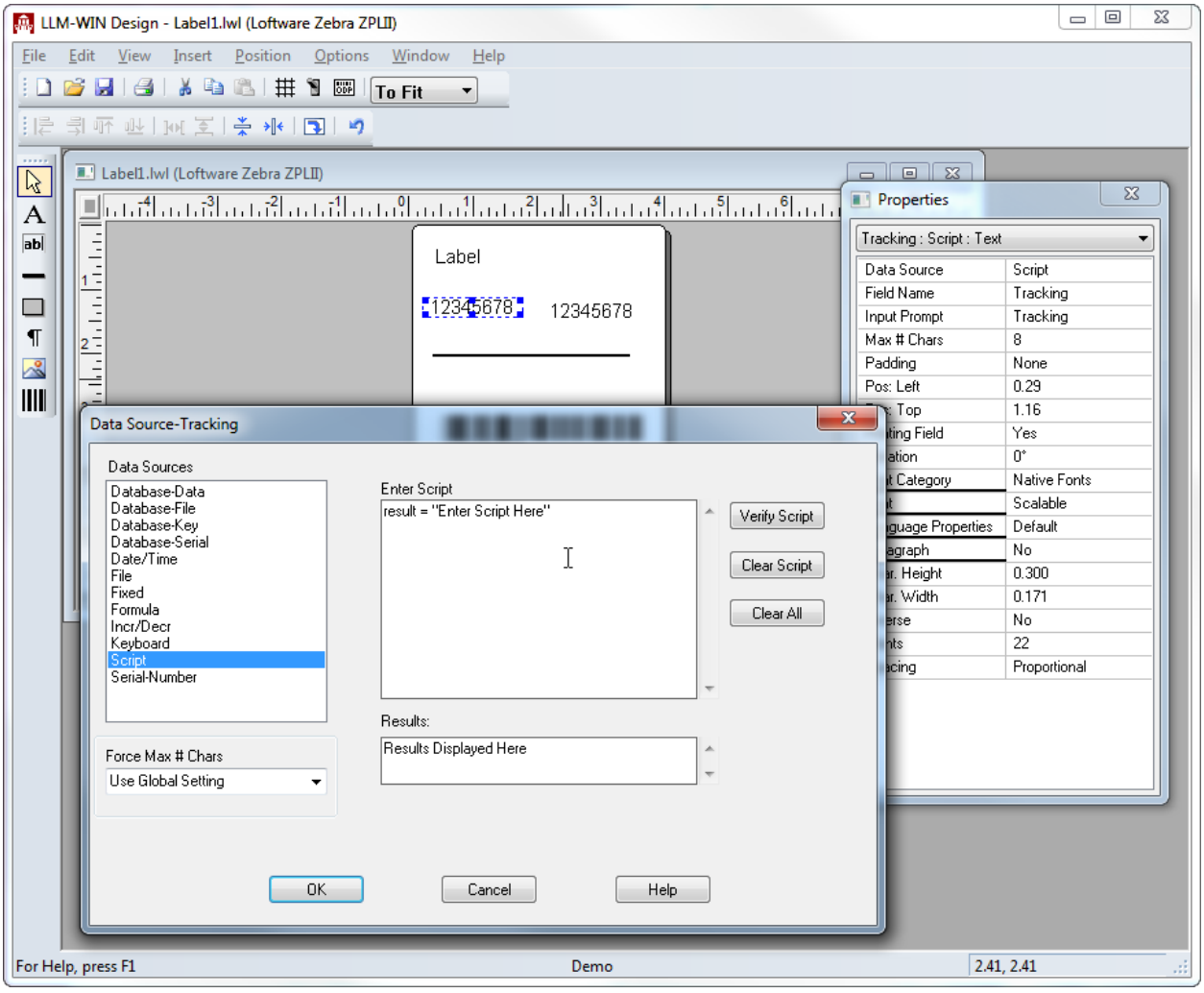
- Click **Clear Script** to remove the text from the **Enter Script** field.
- Click **Clear All** to remove the text from both the **Enter Script** and **Results** fields.

Find a Script on the Label

On labels with many fields, it may become difficult to find the field with the script. Use the Find Script to open the Data Source configuration window for a label's script without first locating the field.

- With a label open, select **Options** | **Find Script**, or right-click on the label, and select **Find Script**.

The **Data Source** configuration window opens, and the field that contains the script is selected on the label.



Data Source configuration window after locating script using Find Script

ISBT 128 Barcode Label

Note: Registration and licensing with ICCBBA are required if you apply ISBT 128 labels. Requirements and registration forms are available on the ICCBBA Web site (http://iccbba.org).

The ISBT 128 standard (International Society of Blood Transfusion) is used in the healthcare industry for transferring information on identifying, labeling, and processing human blood. It mandates that ISBT barcodes conform to a specific layout.

Technical specification on ISBT barcode data structure (data identifiers and content) used to deliver ISBT 28 data structures is published on the ICCBBA Web site (ISBT 128 Standard Technical Specification V3.1.0). Other requirements, including additional Code 128 barcode rules, barcode dimensions and visual representation of data on the label quadrants, are also described in this document. Also available on the Web site is a link to a program that will calculate the mod 37-2 check character required with some ISBT 128 data structures to help verify the accuracy of the input (http://iccbba.org/tech_tools.html).

The LLM Script data source provides a means for applying the ISBT 128 standard to your barcode labels. For example, you can enter a script to compute the checksum character based on the mod 37-2 algorithm. Appendix D of the ICCBBA technical specification document describes the steps in this process and includes a sample C language function that can guide you in creating a JavaScript for the Script data source.

In the sample ISBT 128 label below, barcodes 1 to 4 are required. These and their recommended positioning on the label are also described in the ICCBBA technical specifications document.

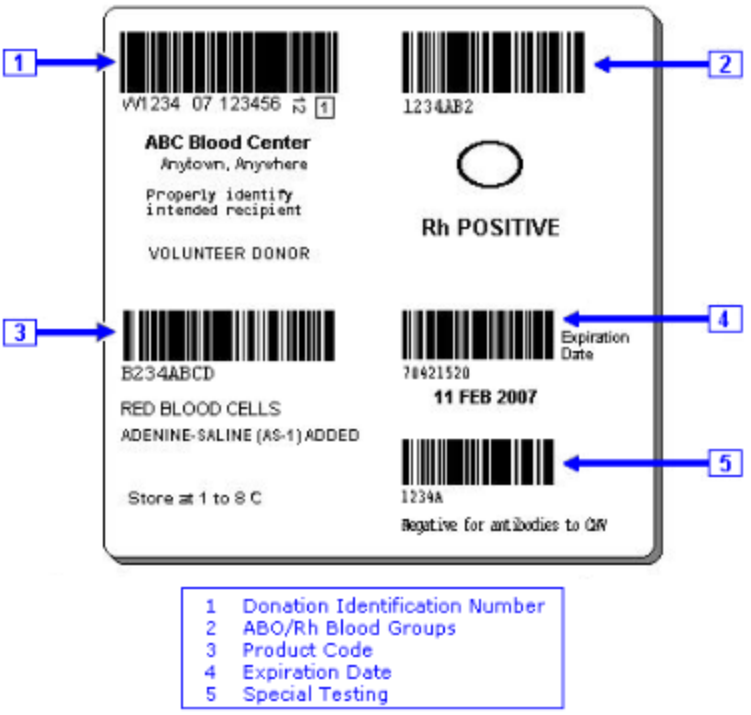


Figure 8.6: Sample ISBT Label

Database Data Source

Using databases can greatly simplify the printing process and eliminate the chances of data entry error. In a typical application, the user enters a key piece of information (for example a part number) and Loftware Label Manager retrieves other data for the label based on the key.

For every database table that is connected to a label, one field (and only one) must be identified as the key field. This means that the key field is used to look up data information from the database.

The Database Data Sources and ODBC

Loftware Label Manager features 32-bit ODBC (Open Database Connectivity) functionality. This allows Loftware Label Manager to retrieve information from database applications supporting the ODBC standards.

In order to use a database with Loftware Label Manager, you must first register it with ODBC

- Start | All Programs | Loftware Labeling | Data Sources (ODBC).

Using Multiple Databases

Loftware Label Manager allows you to attach as many different databases to the label as you want. For example, you might attach to the shipping database for ship-to address information and to the product database for product information such as weight, description, and color.

Using Different Key Fields for Each Database Connection

When you attach multiple databases to a label, each database must have a key field so that Loftware Label Manager knows what information to retrieve from each database. In the example above, you might set up two separate database connections, each with their own key field. In this case, this creates two unrelated database "lookups" by typing a Customer name and retrieving the ship to address and then entering a part number and retrieving the product information.

Using the Same Key Field for Multiple Database Connections

Other applications may require a label to be attached to two separate databases that used the same key field. For example, a label might retrieve some product information from a product structure file using a part number and then look up the on-hand balance from an inventory file, also using the part number. Loftware Label Manager can handle this case as well by making the key field for the second database copy from the key field of the first database. This is done using the Database-Key data source dialog boxes Get Value From/Copy From function.

Using Data from One Database as the Key to Another Database

In a third application, you may have a situation where you need a relational lookup - where data that was returned from the initial lookup is used as a foreign key into a secondary database. This can be accomplished by defining a secondary Database-Key field and then setting the Get Value From/Copy From value as one of your Database-Data fields.

Relational Lookup Example

A part number database, such as LESSON2.DBF in the LLMWIN/DBASES directory contains information such as stock numbers, descriptions, UPC numbers, finishes pertaining to the stock item. If another field was added to the part number database, such as Customer Number, this database could be relationally linked to another, different database containing comprehensive company address information.

Related Information

For help on registering databases with ODBC, refer to the Windows Control Panel, the ODBC section of this guide or the Loftware Knowledge Base.

For examples and details of using multiple databases with your labels, refer to Help or the Knowledge Base .

Fixed-Image Data Source

The following options determine what happens when fixed images are embedded in a label.

- **Do Not Save** - Use this when you want the label to always use the latest image.
- **Always Update** - Automatically update the image embedded in the label if the image has been updated on the file system.
- **Prompt Before Update** - Display a prompt asking if the embedded image should be updated with the latest image on the file system.
- **Never Update** - Do not update the embedded image with the latest image on the file system.

Note: If **Always Update** or **Prompt Before Update** are selected and a new image is updated, you must save the label before the embedded image will be updated.

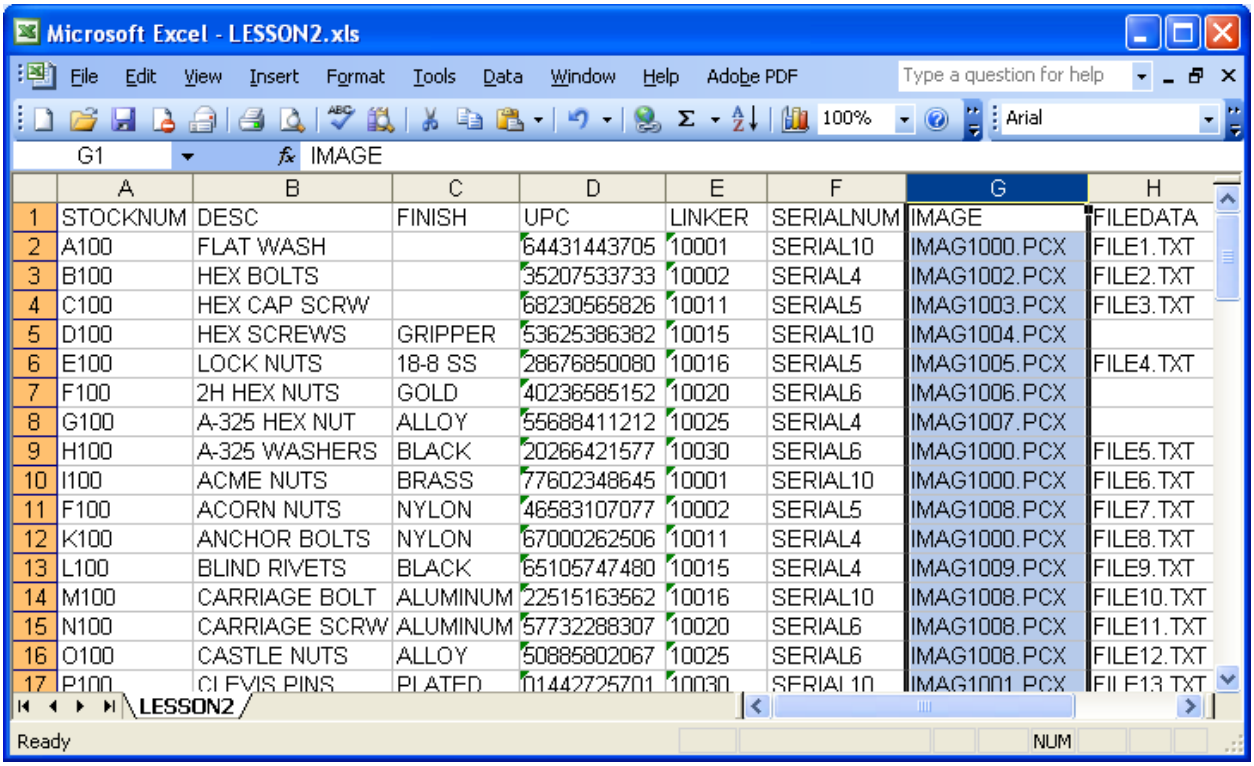
Loftware Label Manager's Database Connection Types

You can use Loftware Label Manager to create the following types of database connections :

- Database-Key
- Database-Data
- Database-Serial
- Database-File

If you wish to include image names for a variable image field in your database, you must specify the name and extensions (for example, BOLT.BMP). Do not specify a path because the default Images directory is assumed. Select Options | File Locations to change the default image directory.

The sample screen that follows depicts a database calling out an image file name:



	A	B	C	D	E	F	G	H
1	STOCKNUM	DESC	FINISH	UPC	LINKER	SERIALNUM	IMAGE	FILEDATA
2	A100	FLAT WASH		64431443705	10001	SERIAL10	IMAG1000.PCX	FILE1.TXT
3	B100	HEX BOLTS		35207533733	10002	SERIAL4	IMAG1002.PCX	FILE2.TXT
4	C100	HEX CAP SCRW		68230565826	10011	SERIAL5	IMAG1003.PCX	FILE3.TXT
5	D100	HEX SCREWS	GRIPPER	53625386382	10015	SERIAL10	IMAG1004.PCX	
6	E100	LOCK NUTS	18-8 SS	28676850080	10016	SERIAL5	IMAG1005.PCX	FILE4.TXT
7	F100	2H HEX NUTS	GOLD	40236585152	10020	SERIAL6	IMAG1006.PCX	
8	G100	A-325 HEX NUT	ALLOY	55688411212	10025	SERIAL4	IMAG1007.PCX	
9	H100	A-325 WASHERS	BLACK	20266421577	10030	SERIAL6	IMAG1000.PCX	FILE5.TXT
10	I100	ACME NUTS	BRASS	77602348645	10001	SERIAL10	IMAG1000.PCX	FILE6.TXT
11	F100	ACORN NUTS	NYLON	46583107077	10002	SERIAL5	IMAG1008.PCX	FILE7.TXT
12	K100	ANCHOR BOLTS	NYLON	67000262506	10011	SERIAL4	IMAG1000.PCX	FILE8.TXT
13	L100	BLIND RIVETS	BLACK	65105747480	10015	SERIAL4	IMAG1009.PCX	FILE9.TXT
14	M100	CARRIAGE BOLT	ALUMINUM	22515163562	10016	SERIAL10	IMAG1008.PCX	FILE10.TXT
15	N100	CARRIAGE SCRW	ALUMINUM	57732288307	10020	SERIAL6	IMAG1008.PCX	FILE11.TXT
16	O100	CASTLE NUTS	ALLOY	50885802067	10025	SERIAL6	IMAG1008.PCX	FILE12.TXT
17	P100	CLEVIS PINS	PLATED	01442725701	10030	SERIAL10	IMAG1001.PCX	FILE13.TXT

Figure 8.7: Database calling out an image file name

Database-Key

> **Note:** The Loftware Label Manager subsystem uses ODBC (Open Database Connectivity) to access external databases.

When you want to retrieve information from a database, Loftware Label Manager requires a key connection. This connection is a look-up command that instructs Loftware Label Manager to locate the appropriate record for the required data.

In Loftware Label Manager, select the **Database-Key** option from the **Data Source** dialog box to identify your data key.

To better understand Database-Key and its look-up function, think of searching for a telephone number. In a telephone listing, Name is the key connection. That is, you locate a telephone number by searching for the name first. An individual's name provides the key to other pieces of data, such as a street address and telephone number.

Loftware Label Manager's ODBC works the same way. When you identify the look-up key, for example, Part Number, you are providing the user with the key that allows Loftware Label Manager to retrieve critical data for your labels. The Database-Key is unique because even though the data source is Database, it also requires keyboard input from the user. It is both a keyboard entry field and the look up key for the database.

Every label that is attached to a database must have one field that is designated as the Database-Key. The Database-Key field is a dual-purpose field:

- It accepts keyboard input from the user or LPS pass file.
- It retrieves data from a database like a Database-Data field.

Note: A Database-Key may not be linked to a Unicode field in a database.

The **Database Connection** section of the Database-Key setup dialog defines the connection to the database. Database-Key / Data Source fields have the following options:

Key	Description
Data Source	Select the name of the database to which you want to connect. This is the data source name (DSN) you assigned to the database in the ODBC Control Panel. For some ODBC drivers, this name is the name of a single database. For other ODBC drivers, such as the .DBF driver, this name is the name of a group of databases.
Table	Select the name of the specific table in the database to which you want to connect. For relational databases, like Microsoft Access, this is the name of a table in the selected database. For flat-file databases, like .DBF files, this is the name of the specific database. For Microsoft Excel workbooks, this field contains the name of the specific worksheet in the workbook.
Field	Select the name of the field in the database that you want to associate with this field on the label.

The **On-Demand Print Form Setup** section of the Database-Key setup dialog defines how this field is set up on the On-Demand Print Form. The options are:

Option	Description
Get Value From	The Get Value From field defines from where the key field entry comes. For simple database connections, this is always Keyboard (the default).
Entry is Optional	Check this option if you want to allow the user to bypass the look-up function and omit database data from selected labels.
Disable Browse	Select Disable Browse to prevent users from selecting from multiple database values.
Help Text	The Help Text field allows you to enter a custom prompt that is displayed in the Status Bar (at the bottom of an On-Demand Print Form) to assist the user in data entry.

Related Information
For information on how to connect to your database using ODBC, refer to the ODBC section of this guide.

Database-Data

Note: Variable images can be useful if you wish to have a different picture of each of your products on their corresponding label. Variable images may be specified as coming from a database or the keyboard.

The Database-Data data source directs Loftware Label Manager to retrieve data for the field from a specified field in the database. This is the most common type of look-up.

Returning to the telephone directory example, assuming that you have defined some other field as Database-Key (Name field in the telephone database), we could then attach the Database-Data to the Phone Number field in the telephone book database. At print time, whenever you type a Name in the associated Database-Key field and press **Enter**, the telephone number is automatically entered into the field associated with the Database-Data.

The top part of the Database-Data setup dialog defines the connection to the database. This connection is the same as described above for Database-Key.

Important Note: If you want to link to a Unicode Field, you must set up the field via the Language Properties Wizard and set the data format to UTF-16.

Options for Database-Data Data Source fields

Option	Description
Data Source	Select the name of the database you want to connect to through ODBC. This is the data source name (DSN) you assigned to the database in the ODBC Control Panel.
Table	Select the name of the specific table in the database to which you want to connect.
Field	Select the name of the field in the database from which you want to retrieve data.

Note: If you have previously made a database connection, Loftware Label Manager remembers the last database and table selected. If you are setting up a number of fields from the same database, the database and table are automatically pre-set for you. You need only specify which field in the database contains the information for the field on your label.

The bottom part of the **Database-Data** dialog box defines how this field is set up on the On-Demand Print Form. The options are:

Display on Form

Defines if the retrieved data is displayed on the On-Demand Print Form and if the user is able to override the retrieved data.

Option	Description
Don't Display	Retrieves and prints the data, but it is not displayed on the On-Demand Print Form
Display, Do Not Allow Changes	Retrieves and displays the data in the On-Demand Print Form so the user can verify that the correct data has been retrieved. The user, however, cannot change the data.
Display And Allow Changes	Retrieves and displays the data in the On-Demand Print Form so the user can verify that the correct data has been retrieved, as well as allowing the user to make changes to the retrieved data.

Data: Help Text

The Help Text field allows you to enter a customized prompt that is displayed in the Status Bar (at the bottom of an On-Demand Print Form) to assist the user in data entry.

> **Related Information**
> For more information on connecting database data to your labels, refer to Database Key in this guide.

Database-File Data Source

The Database-File data source is used to connect a field on a label with a field in the database, similar to the Database-Data data source. The difference is that the Database-File assumes that the matching database field contains the name of a file that contains the data for the field.

> **Example**
> A manufacturer of cleaning solvents might have several different In-case-of-contact warnings. Rather than repeating this information for every product in the database, the user could create a set of Warning Label text files and tell Loftware Label Manager to use the database to look up and retrieve an appropriate file in response to a number or code entered by the user.

The Database-File setup dialog defines the connection to the database. This connection is the same as described previously for Database-Data.

Option	Description
Data Source	Select the name of the database to which you want to connect. This is the data source name (DSN) you assigned to the database in the ODBC Control Panel. See Database Key for notes on Data Source Name.
Table	Select the name of the specific table in the database to which you want to connect.
Field	Select the name of the field in the database that contains the name of the file from which you want to retrieve data. **Note:** Loftware Label Manager checks the Data subdirectory for the file if you do not specify a full pathname. You can change the default directory using the Options | File Locations | Text Data Files menu.

Note: Fixed data does not show up on the On-Demand Print Form but does show up on the printed label.

Database-Serial Number

The Database-Serial data source is used to connect a field on a label with a field in the database, similar to Database-Data. The difference is Database-Serial assumes that the matching database field contains the name of a Serial Number file to use for this field.

Note: You may not specify a full path name or extension for your serial file names in the database. The subsystem checks the Serial subdirectory for the file. If you wish to use a different directory, you may change it using Options | File Locations. Make sure that all of your serial number files exist in this directory before trying to use your system!

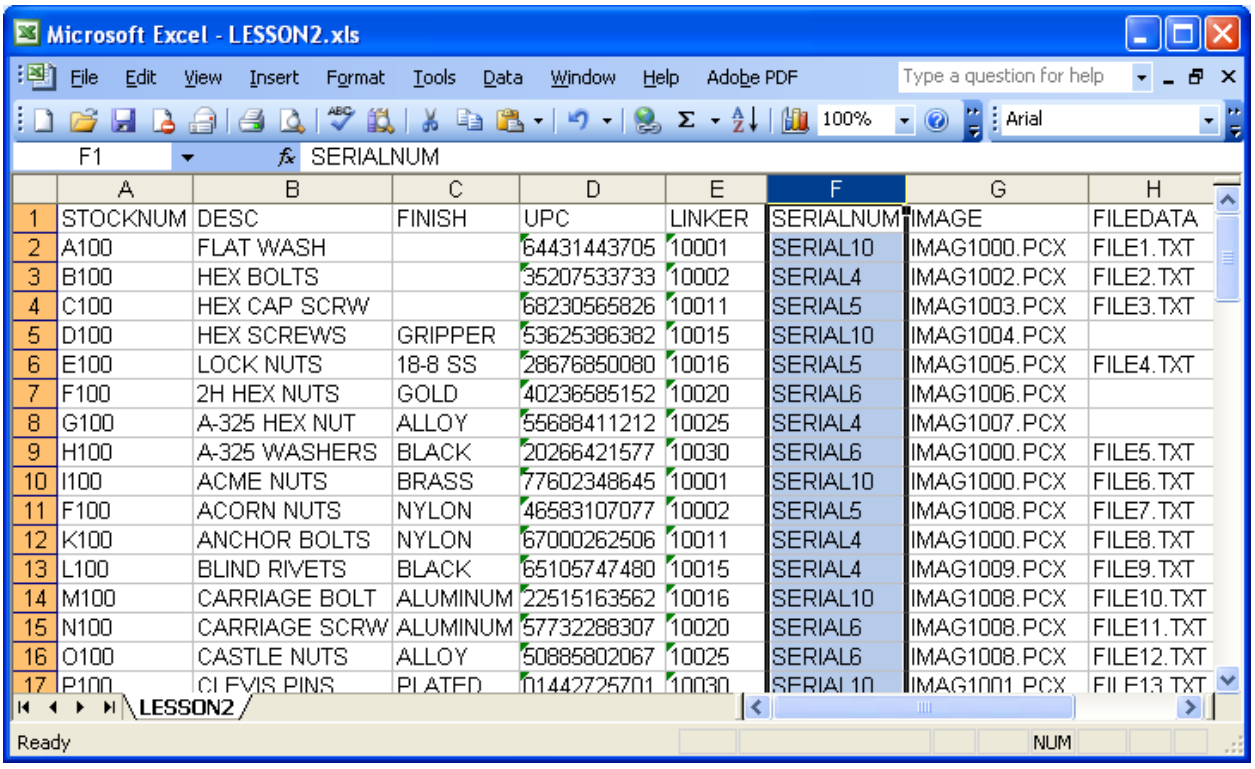
Using this advanced technique, you could set up one AIAG label for all your automotive customers, but have FORD part numbers use a FORD serial number sequence, and GM part numbers use a GM serial number sequence. Loftware Label Manager can look up which serial number to use from the database.

You must create all serial files specified in your database before you can do any printing. Refer to the section below for a technique for creating multiple serial files.

The Database-Serial setup dialog defines the connection to the database. This connection is the same as described above for Database-Data.

Key	Description
Data Source	Select the name of the database to which you want to connect. This is the data source name (DSN) you assigned to the database in the ODBC Control Panel. See Database-Key notes on Data Source Name.
Table	Select the name of the specific table in the database to which you want to connect.
Field	Select the name of the field name in the database that contains the name of the serial number file that you want to retrieve data from for this field on the label. Note: Full pathnames should be supplied if other than the default. Not all serial files specified in the database contain extensions.

The following example shows a sample section of a database that calls out serial file names in the Serial_Num column.



	A	B	C	D	E	F	G	H
1	STOCKNUM	DESC	FINISH	UPC	LINKER	SERIALNUM	IMAGE	FILEDATA
2	A100	FLAT WASH		64431443705	10001	SERIAL10	IMAG1000.PCX	FILE1.TXT
3	B100	HEX BOLTS		35207533733	10002	SERIAL4	IMAG1002.PCX	FILE2.TXT
4	C100	HEX CAP SCRW		68230565826	10011	SERIAL5	IMAG1003.PCX	FILE3.TXT
5	D100	HEX SCREWS	GRIPPER	53625386382	10015	SERIAL10	IMAG1004.PCX	
6	E100	LOCK NUTS	18-8 SS	28676850080	10016	SERIAL5	IMAG1005.PCX	FILE4.TXT
7	F100	2H HEX NUTS	GOLD	40236585152	10020	SERIAL6	IMAG1006.PCX	
8	G100	A-325 HEX NUT	ALLOY	55688411212	10025	SERIAL4	IMAG1007.PCX	
9	H100	A-325 WASHERS	BLACK	20266421577	10030	SERIAL6	IMAG1000.PCX	FILE5.TXT
10	I100	ACME NUTS	BRASS	77602348645	10001	SERIAL10	IMAG1000.PCX	FILE6.TXT
11	F100	ACORN NUTS	NYLON	46583107077	10002	SERIAL5	IMAG1008.PCX	FILE7.TXT
12	K100	ANCHOR BOLTS	NYLON	67000262506	10011	SERIAL4	IMAG1000.PCX	FILE8.TXT
13	L100	BLIND RIVETS	BLACK	65105747480	10015	SERIAL4	IMAG1009.PCX	FILE9.TXT
14	M100	CARRIAGE BOLT	ALUMINUM	22515163562	10016	SERIAL10	IMAG1008.PCX	FILE10.TXT
15	N100	CARRIAGE SCRW	ALUMINUM	57732288307	10020	SERIAL6	IMAG1008.PCX	FILE11.TXT
16	O100	CASTLE NUTS	ALLOY	50885802067	10025	SERIAL6	IMAG1008.PCX	FILE12.TXT
17	P100	CLEVIS PINS	PLATED	01442725701	10030	SERIAL10	IMAG1001.PCX	FILE13.TXT

Figure 8.8: Database calling out serial file names

Creating Multiple Serial Files

1. Create a variable text field on your label that is later deleted.
2. Double-click this field to open the Data Source screen.
3. Click **Serial Number**.
4. Click **New** to create as many serial files as you need.
5. Delete the variable text field.

Quantity and Duplicate Values from a Database

Quantity and Duplicate can be specified at print time. Optionally, you can override the quantity (or duplicate) setting through new values retrieved from your database.

Setting Quantity and Duplicate Values

1. Create a field in your database and enter quantity values appropriate for that record.
2. Create a non-printing field on your label and assign it (via the Properties box) an exact Field Name of **QUANTITY (or **DUPLICATES)
3. Follow the procedures for changing the data source for this label field to Database-Data and attach it to your database field containing the quantity information.

Once configured, Loftware Label Manager uses the new value derived from your database for every print run of labels, regardless of the value shown in the Quantity field on the printing screen.

There are three ways to print labels On-Demand with Loftware Products. This section describes the method of prompting the operator for label data and making label requests.

The On-Demand Print Client works as a client to the Loftware Print Server and has most of the functionality of On-Demand Print. The Thin Client does not require that LPS be installed on the Client computer and can be far easier to maintain if you have several print stations.

The WebClient is similar to the traditional On-Demand Print but runs across the Internet to print labels on-demand.

To print from within Loftware Label Manager using Loftware's On-Demand printing module, enter data into the On-Demand Print Form generated from the label that you designed. On-Demand printing allows labels to be printed on an as needed basis. You can produce a single label or several identical copies of the same label. All data sources, serial numbers, formulas, check digits, and calculations are evaluated on-the-fly based on the data requested at print time.

Every time you create a label, Loftware Label Manager automatically creates a default On-Demand Print Form for use in the On-Demand Print Module and the Thin Client Module.

Figure 9.1: Default On-Demand Print Form

For more information about on-demand printing options, refer to the *Loftware Print Server User's Guide*.

On-Demand Printing

Starting On-Demand Printing

1. Choose one of the following methods to start On-Demand printing:
   a. Click the On-Demand printing icon in Loftware Label Manager's design view.
   b. Click **Start** | **All Programs** | **Loftware Labeling** | **On-Demand Print 32**. The On-Demand application is displayed with the file open dialog box. The listed labels are those in the labels directory specified in Options | File Locations. The default is the Loftware Labeling\Labels subdirectory.
2. Select the label you wish to print from the list of files and click **OK**. The On-Demand Print Form for the selected label is displayed.
3. Enter data in the fields displayed on the On-Demand Print Form, or select fields from a database. Press Enter or Tab to move to the next field; press **Shift+Enter** or **Shift+Tab** to move to the previous field.
4. Click the active printer icon to print labels, or use the **File** | **Print** menu command, **F9**.
5. The Print Labels dialog box lets you specify the number of labels you want to print, as well as a default quantity of labels. This dialog box is not displayed when you use the printer icon to request a print.
6. Click **OK** to print labels.
7. Repeat steps 3 and 4 to print additional labels or use the **File** | **Open** menu command to load and print a new label. The On-Demand Print application with a sample On-Demand Print Form is displayed.

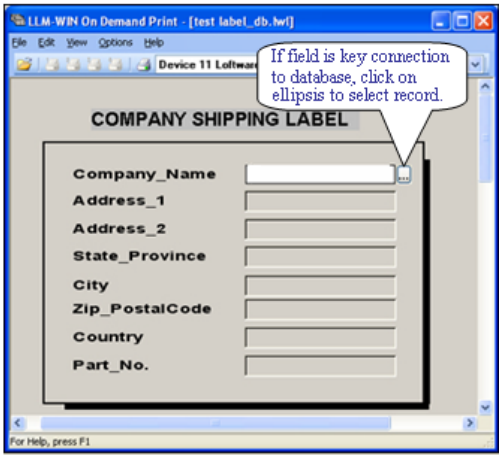


Figure 9.2: The On-Demand Print application with a sample On-Demand Print Form

Entering Data

When you first load a label, the top left data entry field is selected - it contains a flashing cursor. Type data into the selected field and edit the data using the cursor keys, backspace key, or standard copy, cut, and paste operations. If your label is connected to a database, the cursor defaults to the field defined as the Database-Key. A browse button (...) is also displayed when a label is connected to a database. See the next section for more information on browsing in a database.

Entering RFID Data

If you are using On-Demand Print to print an RFID label, the procedure is much like an ordinary On-Demand Print job, except that the data that you supply must be in a hex format. Only the numerals 0-9 and letters A-F are accepted in the ODP application. RFID data will normally be derived from other fields or will be in a database. It is rare that you would actually type it in.

Setting Quantities and Duplicates

Occasionally, a label may feature more fields than can be displayed at one time on the On-Demand Print Form. If this occurs, a scroll bar is displayed on the right hand edge of the On-Demand Print Form. As you TAB through the On-Demand Print Form, the screen automatically scrolls to display the next data entry field. When you TAB through the last (bottom) field, the screen scrolls back to the first (top) field, setting Quantity and Duplicate Copies.

- When performing data entry prior to printing, Loftware Label Manager allows you to select the desired quantity of labels and duplicate copies.
- The Quantity value specifies the number of labels you want to print. The Duplicates value specifies how many duplicates you want of each label. The following examples clarify the difference.

Assume a label has an incrementing numeric Serial Number attached to it (a counter). The starting number for the following examples is 1.

Set Quantity to 8 and Duplicates to 1

Eight total labels are printed.

The labels are sequentially numbered 1, 2, 3, 4, 5, 6, 7 and 8

Set Quantity to 5 and Duplicates to 2

Ten total labels are printed.

There are five sets of two labels numbered 1, 1, 2, 2, 3, 3, 4, 4 and 5, 5. There are 5 (Quantity) of labels with a duplicate of each.

Set Quantity to 1 and Duplicates to 5

Five total labels are printed.

There are five identical (duplicate) labels produced, numbered 1, 1, 1, 1 and 1.

The total number of labels printed is always Quantity x Duplicates.

If your label does not have a Serial Number or an incrementing or decrementing counter field, changing either Quantity or Duplicates has the same effect.

Quantities and Duplicates Methods

In the On-Demand Print Application:

- Click in the **Quantity** or **Duplicates** box, type in the new value, and press **Enter**.
- Alternatively, enter the Quantity and Duplicates in the **Print Label Reset** dialog box if you use the **File** | **Print** menu command to print. Default Quantity and Duplicates are also entered into this dialog box.

Note: You may specify Quantity and/or Duplicate amounts directly from a database.

Printing with On-Demand Print

Using Printing Shortcuts

Typically, in a production printing environment, an operator prints many requests. To speed up the printing process, On-Demand printing has four printer icons on the toolbar, one for each assigned printer.

After all of the data for a label have been entered, the operator can click the appropriate printer icon. You can also press **ALT+1** to print to Printer 1, **ALT+2** to print to Printer 2, **ALT+3** to print to Printer 3 or **ALT+4** to print to Printer 4.

Associating .LWL files with On-Demand Print

You may want to have On-Demand Print rather than Design open .lwl files.

To set up an .LWL file to open in On-Demand print

1. From the Windows Explorer, select Tools | Folder Options.
2. Select the File Types tab.
3. Scroll through the list and select LWL Label Document.
4. Click **Change**.
5. Select On-Demand Print from the list.
6. Click **OK** on all the dialog boxes.

Note: You may use this same technique to associate .lwl files with other Loftware applications such as Range Print.

Printing Labels Connected to a Database

There are a few special considerations for printing using database connections:

- When you attach your label to a database, you must designate one input field as a key field. This is the field that the operator enters data into or chooses from the Database Browse window that tells On-Demand Print which record to retrieve from the database.
- In On-Demand printing, when you type a value into a key field and press **Enter** or **Tab**, On-Demand printing retrieves the associated record and displays the data from that record.
- If you type in a database key and multiple matching records exist for the key, Loftware Label Manager displays a list of possible matching fields. Select the appropriate record from the list.

Note: It is possible to override a key field value by enabling Allow Empty Records During Database Retrieval in the Options | Preferences | Options tab or setting AllowEmptyRecordSet=1 in the LLMWDN32 Configuration file (Start | All Programs | Loftware Labeling | System Folders | Configuration).

Filtering and Browsing a Database

The following sections describe how to gather data from a database for a label using a variety of timesaving methods.

Filtering a Database

If you have a large database, you can save time by using LLM's filtering option. If you type in one or more characters, you can select only a part of the database and specific records.

1. Open the desired label; place the cursor in the key field.
2. Type one or more characters into the text box, click the browse button (...), or press **Ctrl** + **B**.

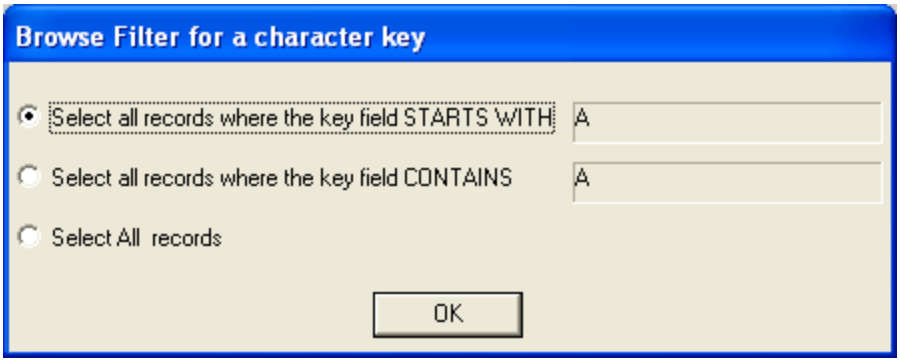

Browse Filter for a character key
Select all records where the key field STARTS WITH
A
Select all records where the key field CONTAINS
A
Select All records
OK

Figure 9.3: Browse Filter Dialog Box

3. Select one of the three options listed, click **OK**.
4. Scroll to select the record, or browse further using the Search Key.

Browsing a Database

To find the key field at print time, you can perform a browse of available database records by:

- Moving the cursor to the key field.
- Using the Edit | Browse menu command or pressing **Ctrl+B**.
- Clicking the browse button (...) to view a list of available records.

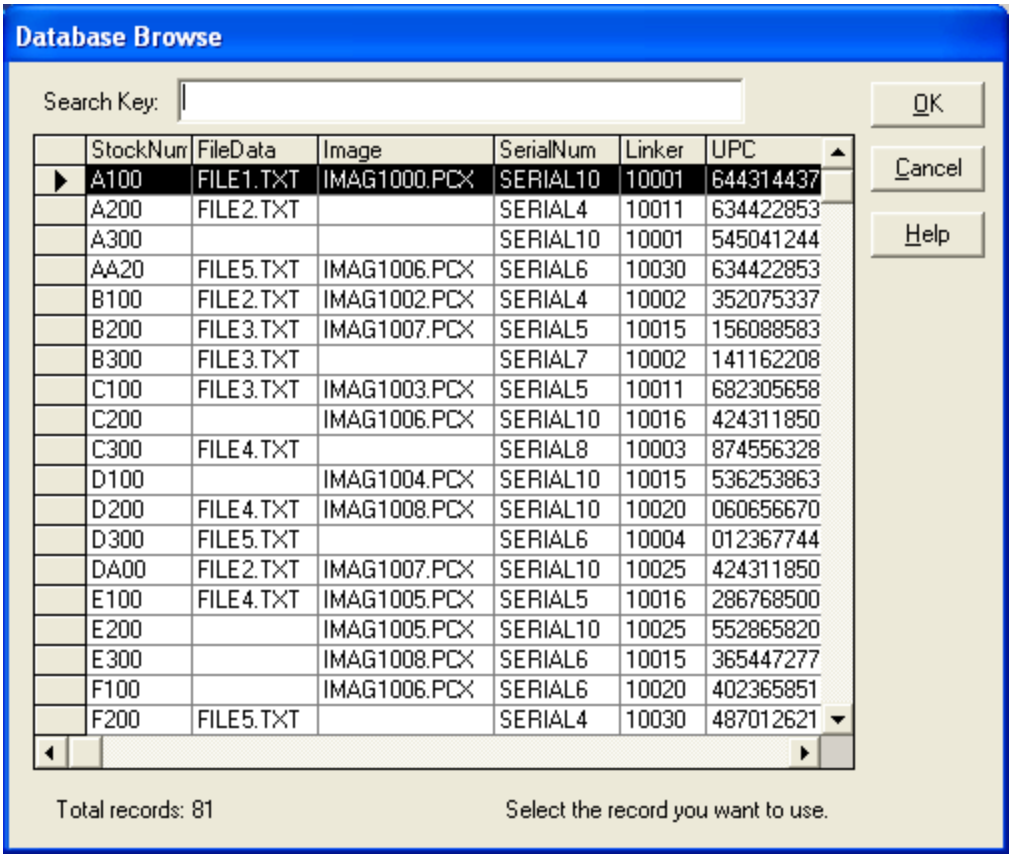
Loftware Label Manager displays a **Database Browse** window that contains a full list of the records in the database.

Retrieving a Record

You can retrieve a record one of the following ways:

- Select the desired record and click **OK**.
- Type in the first character (or characters) of the record in the **Search Key** text box.

See the following examples:



StockNum	FileData	Image	SerialNum	Linker	UPC
A100	FILE1.TXT	IMAG1000.PCX	SERIAL10	10001	644314437
A200	FILE2.TXT		SERIAL4	10011	634422853
A300			SERIAL10	10001	545041244
AA20	FILE5.TXT	IMAG1006.PCX	SERIAL6	10030	634422853
B100	FILE2.TXT	IMAG1002.PCX	SERIAL4	10002	352075337
B200	FILE3.TXT	IMAG1007.PCX	SERIAL5	10015	156088583
B300	FILE3.TXT		SERIAL7	10002	141162208
C100	FILE3.TXT	IMAG1003.PCX	SERIAL5	10011	682305658
C200		IMAG1006.PCX	SERIAL10	10016	424311850
C300	FILE4.TXT		SERIAL8	10003	874556328
D100		IMAG1004.PCX	SERIAL10	10015	536253863
D200	FILE4.TXT	IMAG1008.PCX	SERIAL10	10020	060656670
D300	FILE5.TXT		SERIAL6	10004	012367744
DA00	FILE2.TXT	IMAG1007.PCX	SERIAL10	10025	424311850
E100	FILE4.TXT	IMAG1005.PCX	SERIAL5	10016	286768500
E200		IMAG1005.PCX	SERIAL10	10025	552865820
E300		IMAG1008.PCX	SERIAL6	10015	365447277
F100		IMAG1006.PCX	SERIAL6	10020	402365851
F200	FILE5.TXT		SERIAL4	10030	487012621

Figure 9.4: The Database Browse Window

The list speed searches to the area of the database you are seeking. For example, if you type in “T” in the Search Key box, the database scrolls to the first instance of the parameter “T”; in this case, “T100”.

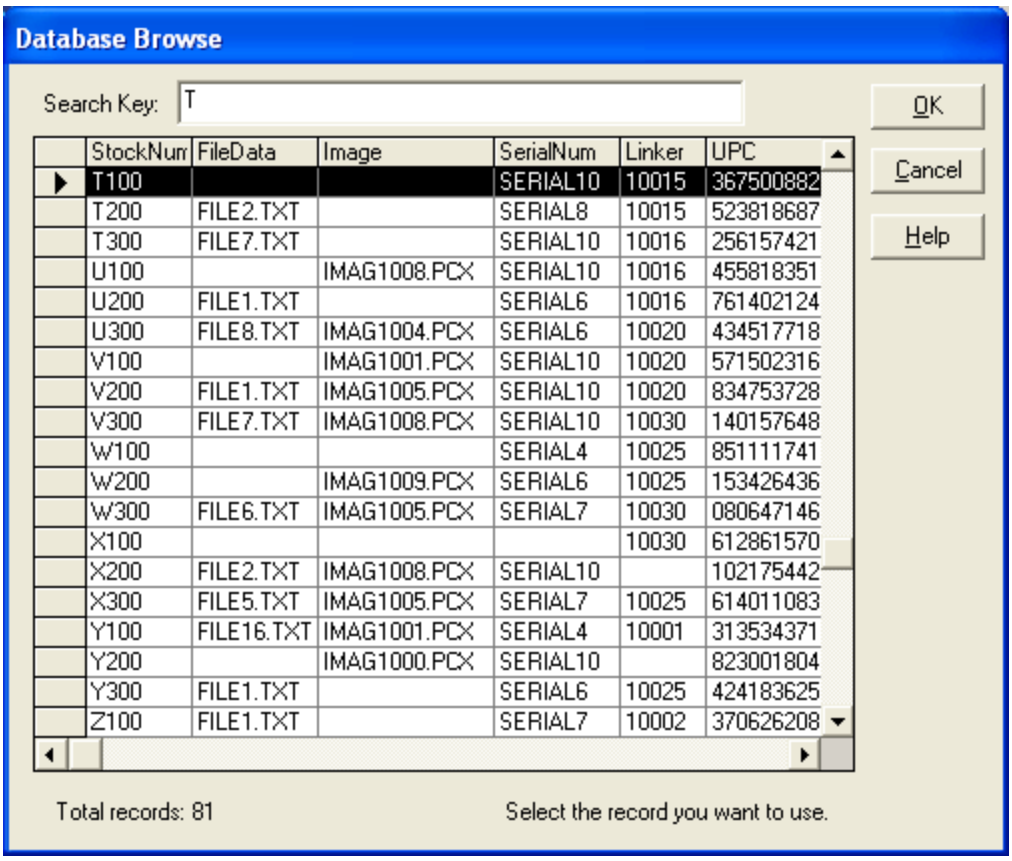

Database Browse
Search Key: T
OK
Cancel
Help
StockNum FileData Image SerialNum Linker UPC
T100 SERIAL10 10015 367500882
T200 FILE2.TXT SERIAL8 10015 523818687
T300 FILE7.TXT SERIAL10 10016 256157421
U100 IMAG1008.PCX SERIAL10 10016 455818351
U200 FILE1.TXT SERIAL6 10016 761402124
U300 FILE8.TXT IMAG1004.PCX SERIAL6 10020 434517718
V100 IMAG1001.PCX SERIAL10 10020 571502316
V200 FILE1.TXT IMAG1005.PCX SERIAL10 10020 834753728
V300 FILE7.TXT IMAG1008.PCX SERIAL10 10030 140157648
W100 SERIAL4 10025 851111741
W200 IMAG1009.PCX SERIAL6 10025 153426436
W300 FILE6.TXT IMAG1005.PCX SERIAL7 10030 080647146
X100 10030 612861570
X200 FILE2.TXT IMAG1008.PCX SERIAL10 102175442
X300 FILE5.TXT IMAG1005.PCX SERIAL7 10025 614011083
Y100 FILE16.TXT IMAG1001.PCX SERIAL4 10001 313534371
Y200 IMAG1000.PCX SERIAL10 823001804
Y300 FILE1.TXT SERIAL6 10025 424183625
Z100 FILE1.TXT SERIAL7 10002 370626208
Total records: 81
Select the record you want to use.

Figure 9.5: The Database Browse Window with a parameter in the Search Key Box.

Disabling the Database Browse Option

The ellipses buttons that enable browsing a database are displayed by default in On-Demand Print. These buttons as well as the Edit | Browse option in the Menu Bar may be hidden or disabled in On-Demand Print. To do this,

1. Select Start | All Programs | Loftware Labeling | System Folders | Configuration, and open the LLMWDN32 Configuration file in a text editor.
2. Scroll to the [Options] Section, and add the following:

```
HideBrowse=1
```

3. Save the Configuration file, and re-open Loftware. All Database browse buttons (...) as well as the menu option are disabled or hidden.

On-Demand Print Form

The default On-Demand Print Form is a column of data entry fields, one for each variable field that requires operator input. By default, each data entry field has the name of the field for a prompt.

Figure 9.6: Sample On-Demand Print Form

If you have given the fields meaningful names, the default On-Demand Print Form allows you to begin printing labels immediately. There are three choices when using On-Demand Print:

1. You can accept default entries for On-Demand Print Forms, or
2. Keep the entries assigned when you designed the label, or
3. Customize the screens to meet your unique printing requirements, including international language characters or special instructions for Data Entry for example.

Many users of Loftware Label Manager find that the default On-Demand Print Forms are satisfactory for their applications and may never use the On-Demand Print Form editing functions.

This section provides the following information on On-Demand Print Forms:

- Customizing an On-Demand Print Form
- Organizing an On-Demand Print Form in a meaningful way
- Creating nonprinting fields on an On-Demand Print Form

Related Information
For examples of ODP customization in international languages, refer to the *International Printing* section.

Customizing the On-Demand Print Form

1. Open or select the label you wish to edit, use the View | On-Demand Print Form menu command or the Switch Views button on the Loftware Label Manager toolbar to switch to the On-Demand Print Form view.
2. Loftware Label Manager displays a Properties box for the On-Demand Print Form, just as it does in design.
3. Edit properties for any field while the On-Demand Print Form is displayed.

Important: Fields which are seen on the On-Demand Print Form but which cannot be changed (display only) have their field name displayed on a grayed out background.

Organizing the On-Demand Print Form

Loftware Label Manager provides you with flexibility to arrange On-Demand Print Forms in ways that enhance your label and are meaningful to your operators. Essentially, you use the same editing techniques available in label design, including:

- Menus and Toolbars.
- Click and drag methods.
- The **Properties** box.
- Change field prompts, and change the font sizes for the field prompts.
- Arrange the fields so that the data is entered in a natural or pre-defined order.
- Use lines and boxes to organize groups of related data items.
- Customize the prompts by defining them in meaningful and descriptive terms.
- Add fixed text instructions to the On-Demand Print Form, or add prompts in the natural language of the operator.
- Resize the edit controls for visual effect.
- Setting the order in which fields are entered

In the Loftware Label Manager, data is always entered from top left to bottom right. If you need to set the order that data is entered, you must move fields so that they are sorted from top left to bottom right.

Resizing a Field's Data Entry Area

By default, the Loftware Label Manager creates all data entry fields with the same width to create a columnar input screen. If you rearrange fields on the On-Demand Print Form, you may wish to resize these data entry fields to more closely match the size of the data that fits in them. The figures below show a sample mailing label and an On-Demand Print Form.

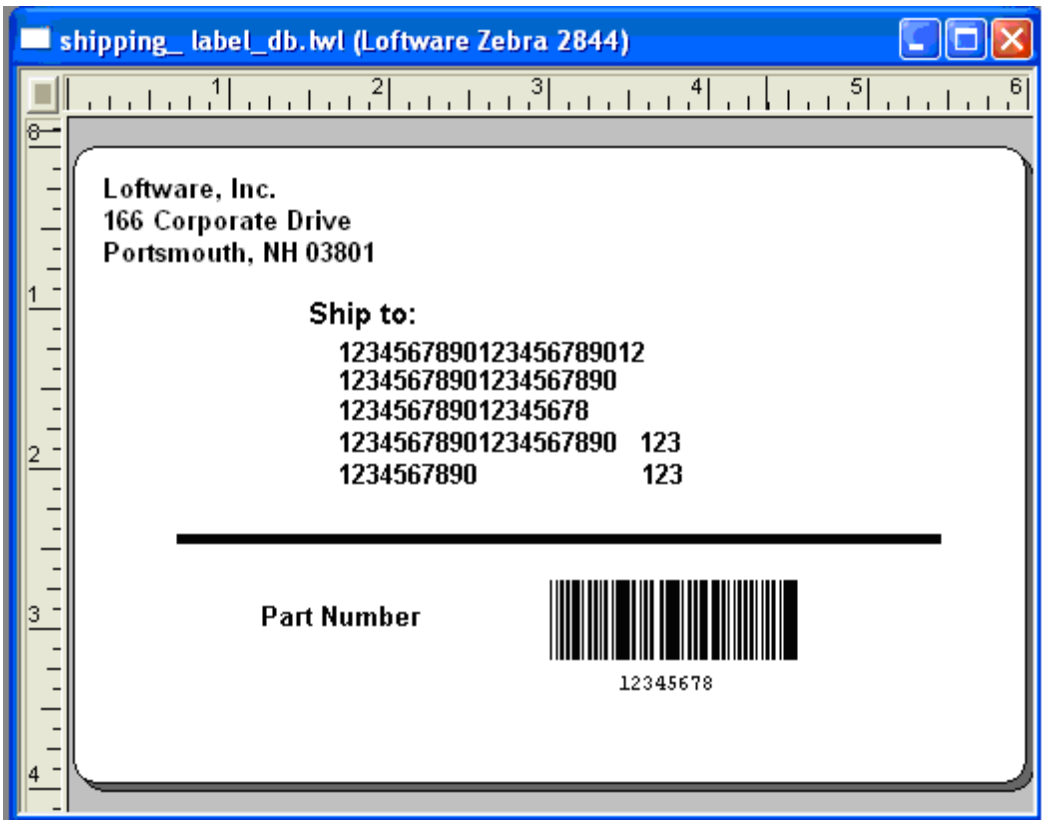


Figure 9.7: Sample mailing label format

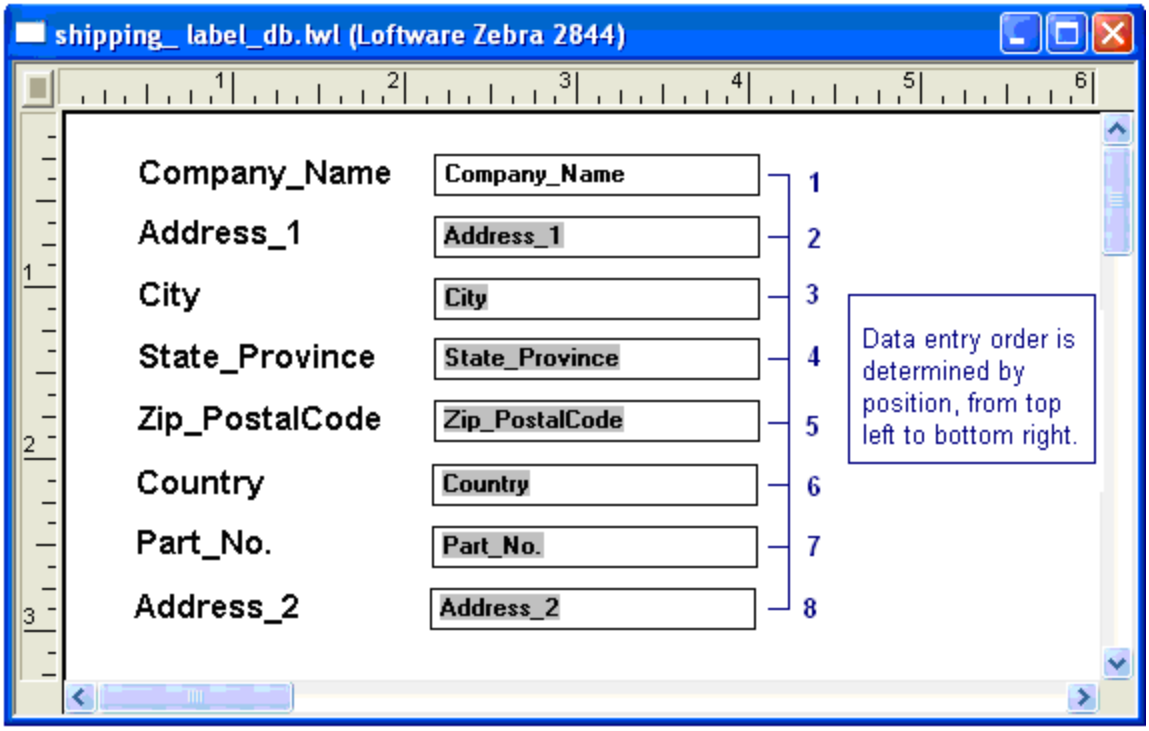


Figure 9.8: Default mailing label On-Demand Print Form

In the figure, "Address_2" is not in the natural place in the entry order. Fields are added to the On-Demand Print Form in the order that they are created on the label. To illustrate our point about customizing On-Demand Print Forms, we added this field last as an after thought.

The rearranged layout, with French input prompts added, looks like the following:

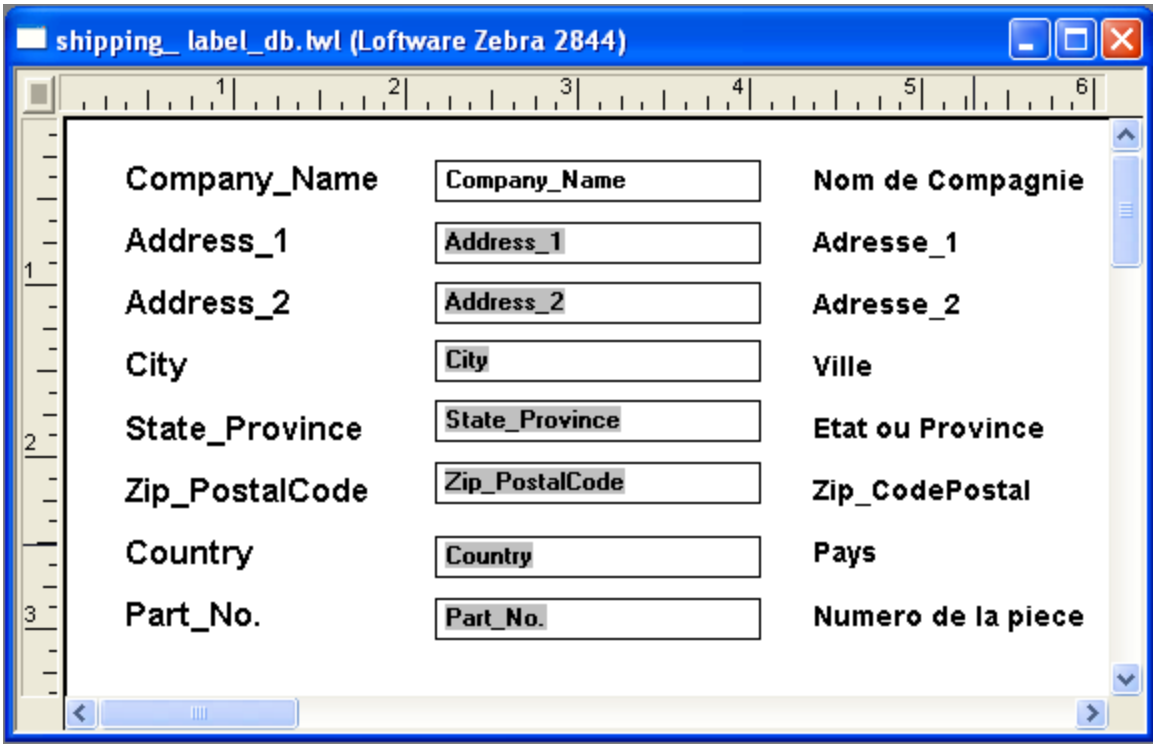


Figure 9.9: Revised mailing label On-Demand Print Form

Using Non-Printing Fields on the On-Demand Print Form

Occasionally, your applications require you to include fields on an On-Demand Print Form, which are not displayed on the label itself. This may happen when you are working with formulas that require an operator to enter a certain value. When this is combined with another value, the result is displayed on the label.

Take a simple mailing label for example. The way it is usually designed, the city name, state and zip code are separate fields. Consequently, the spacing on the printed labels is inconsistent.

For example

RyeNH03870

West ChesterfieldNH03466

Instead of the more natural:

Rye, NH 03870

West Chesterfield, NH 03466

As an alternative, consolidate the City, State and Zip fields on the label into one long field named City_State_Zip.

Consolidate City, State and Zip, Part 1

1. Open Label1.lwl, the example label created in the label creation section of this guide, in Loftware Design Mode. It is a label with City, State, and Zip are 3 separate variable text fields.
2. Select the City field. Change its name to City_State_Zip and change its length to 32 characters.
3. Select the Zip_Code field and press **Delete** (or use the **Edit** | **Cut** menu command) to delete it.
4. Select the State field and press **Delete** (or use the **Edit** | **Cut** menu command) to delete it.

These changes to the label design produce the following:

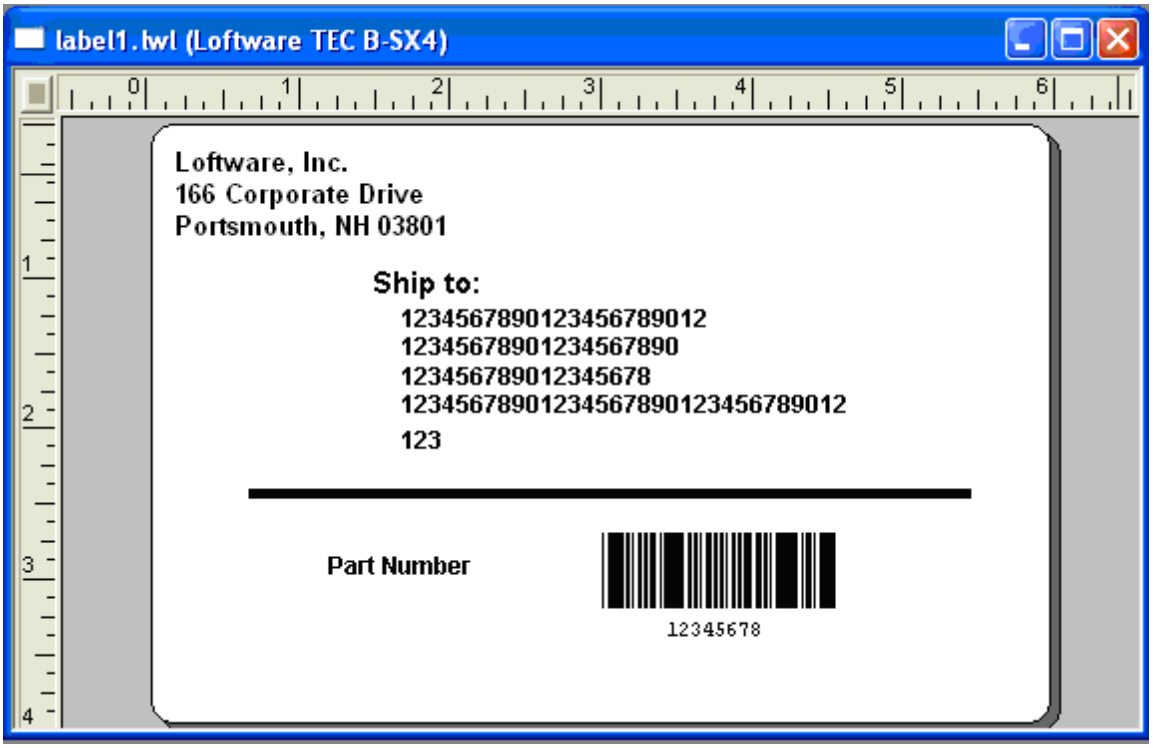


Figure 9.10: Revised label with consolidated City, State and Zip fields

Making this change removed the State and Zip Code entry fields from the On-Demand Print Form.

Consolidate City, State and Zip, Part 2

1. Switch to the On-Demand Print Form using the View | On-Demand Print Form menu command or by clicking the Switch Views icon.
2. Select the Variable Text Tool. This creates a non-printing field since we are creating the field on the On-Demand Print Form instead of on the label.

3. The field is shown when you click the form. Do not worry about the location right now. Name the field City, change its max chars to 32 and change its input prompt to City, State, Zip.
4. Create another non-printing field by placing another variable field on the Print Form. Do not worry about the location right now. Name the field State, change its max chars to 2 and delete its input prompt.
5. Create a third non-printing field. The location is not important right now. Name the field Zip_Postal_Code, change its max chars to 5 and delete its input prompt.

The in-process results of these steps is shown below:

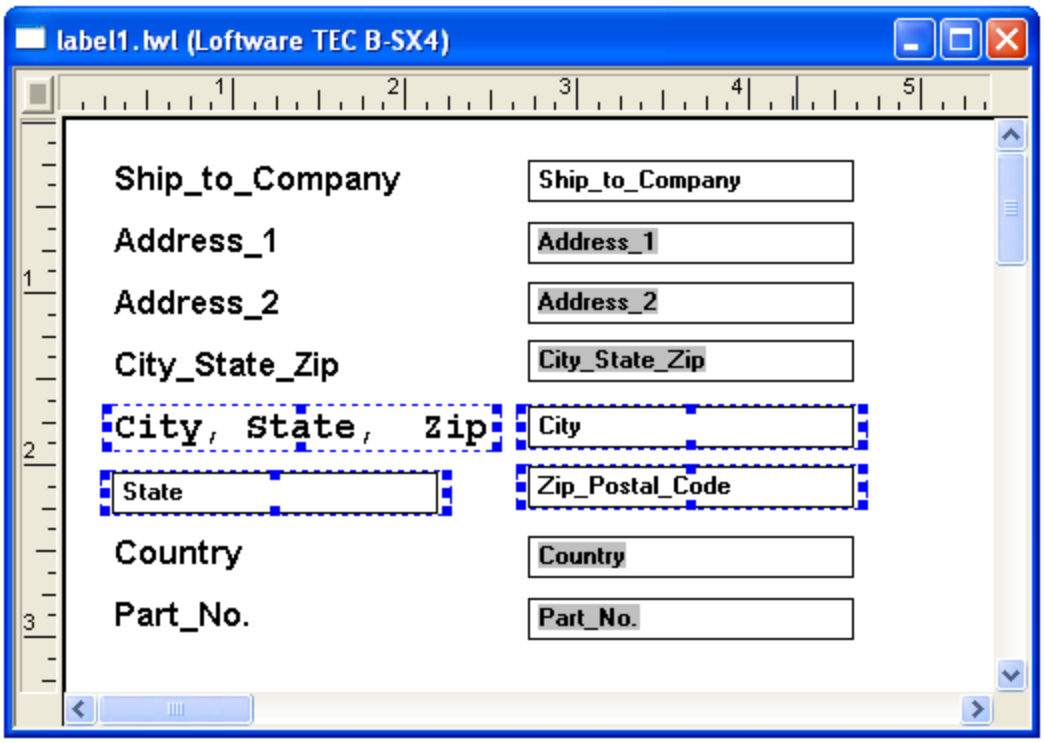


Figure 9.11: Label with non-printing fields selected

Now set up our formula so the City_State_Zip field on the printed label gets its data from our new City, State and Zip/Postal Code non-printing fields.

Consolidate City, State and Zip, Part 3

1. Double-click the City_State_Zip field on the On-Demand Print Form.
2. Change this field data source to Formula, enter the formula:
   "City &" "State &" "Zip_Postal_Code" and press **Enter**.

Note: Notice that the City_State_Zip data entry field disappears from the On-Demand Print Form. Because it is derived from a formula, this field no longer needs a user's input. To edit this field, you must toggle back to Label Design.

3. Move and resize the data entry fields associated with our new non-printing fields so that our On-Demand Print Form looks the way it should.

This simple example demonstrates the basic technique for using non-printing fields. As the Loftware Label Manager's features, such as the formula data source are used, the use of non-printing fields increases.

Note: Non-printing fields may be defined using the **Properties** box instead of using the switch-view approach on the label design screen. This technique is more confusing since you actually see the field on the label design screen. Future designers may not understand what you have done and accidentally delete the field.

On-Demand Print Options

The following section covers:

- Print Preview
- Command Line Parameters

Using Print Preview

When in the On-Demand Printing application, you can preview how the label looks prior to printing it.

1. Open the label you wish to preview in On-Demand Print.
2. Enter data for the label using keyboard entry or the database browse/filter method.
3. Choose File | Print Preview. The **Print Label Reset** dialog appears.

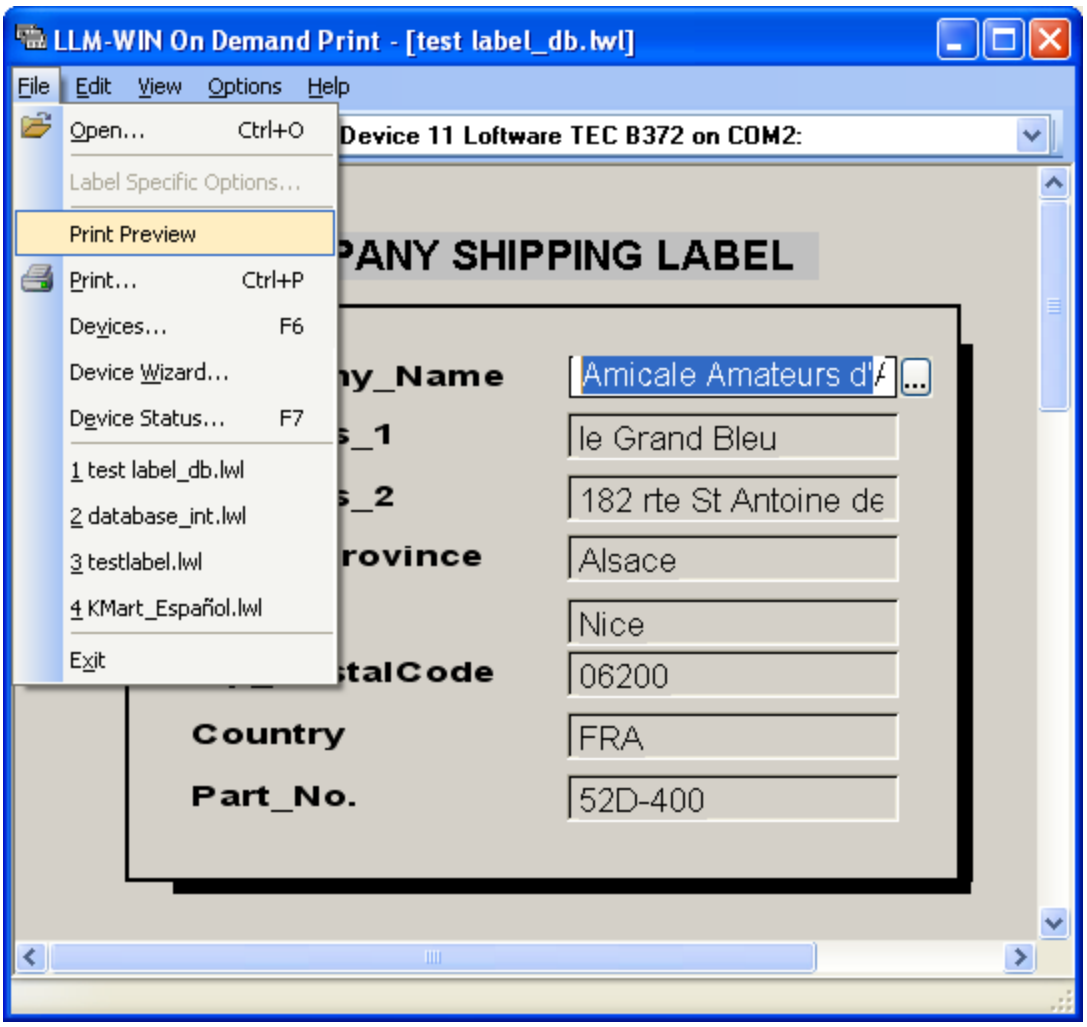


Figure 9.12: LLM On-Demand Print Window showing Print Preview option.

4. Click **OK**, and the **Print Preview** window opens.

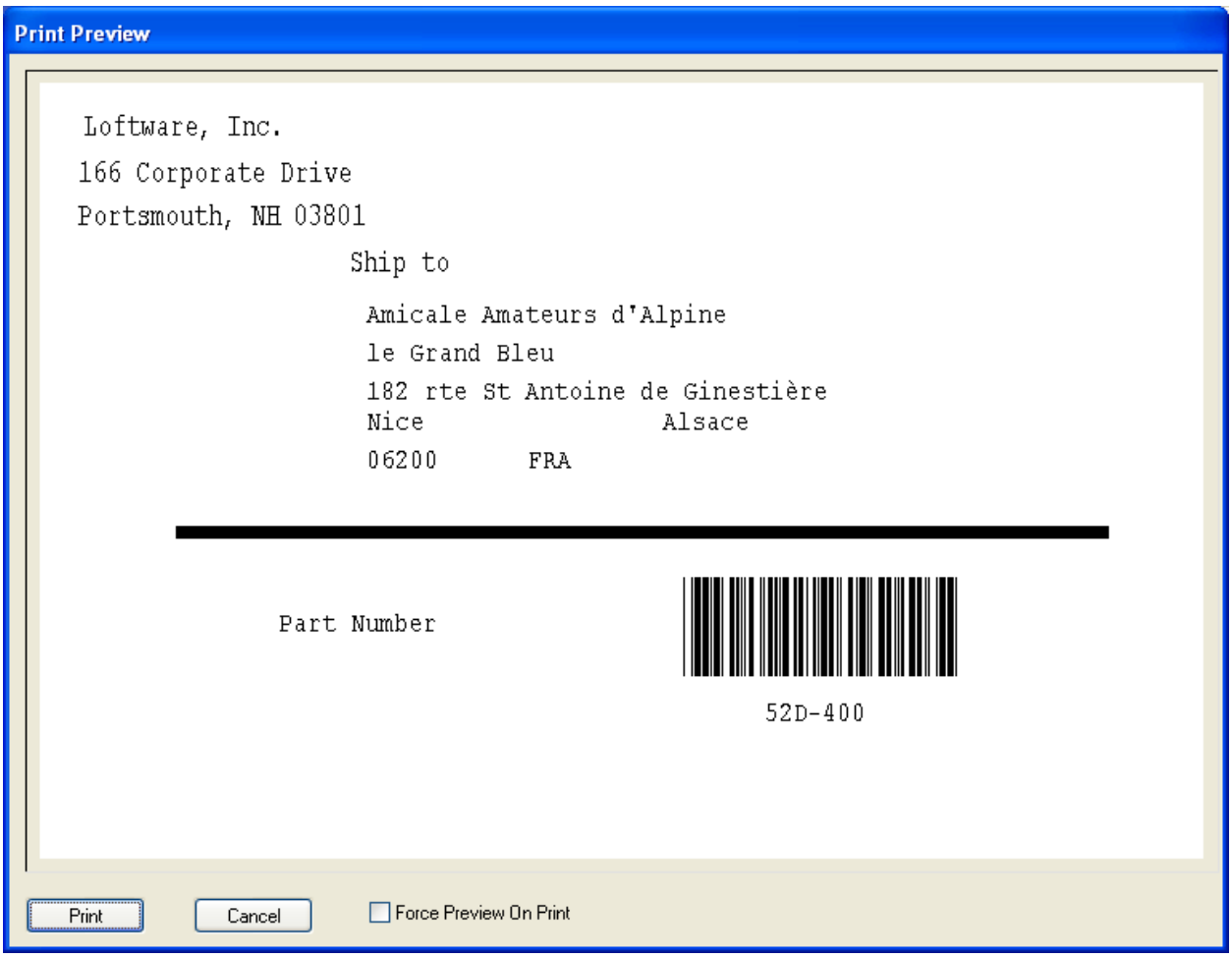


Figure 9.13: The Print Preview Dialog Box

5. Choose from the following options:
   - Click **Print** if you want the label to print as you see it.
   - Click **Cancel** if you would like to change the label before printing.
   - Select **Force Preview on Print** if you wish to see a print preview before the label is printed.

The **Force Preview on Print** is not enabled by default. When it is selected, a preview of the label is displayed each time you click the print icon, or you choose File | Print. The check box is only visible when you choose File | Print Preview.

Related Information

For more information on Padding, refer to the *Designing a Label* section.

On-Demand Print Command Line Parameters

Several command line parameters are available for the On-Demand Print module. However, you do not normally automate On-Demand print since the program requires running interactively. The following command line parameters are available to On-Demand Print.

```
LLMWOD32 {label} {arguments}
```

Parameter	Description
{label}	Optional. The specified label is opened automatically. The dialog box that prompts you to select a label is not displayed. Example: mylabel.lwl
-A	The application is displayed maximized.
-I	The application is displayed minimized.
-N#	Set the default quantity to the specified number. Example: -N5
-D#	Set the default duplicates to the specified number. Example: -D2
-G#	When running non-interactively, specifies the number times each page is printed. Only applicable if a layout is associated with the label or using a printer installed through control panel.
-T	Creates a report file containing the tab Order for the fields on the label. If this is used, you must specify a label. The label name with a .tab extension is created in the directory where the label is located. The tab order of the label is changed by customizing the operator-input screen in label design mode. You may only generate a .tab file with a command line call, the syntax of which is: "LLMWOD32 -T -Llabelname."
E	Do not provide the Warning Message Box if in demo mode. This should only be used when giving a demo of the product

The following table represents a text file with the tab order for a label with three fields (a variable text field, a variable barcode field, and a variable image field). The descriptive text provides field name field length, tab order, and field type:

Field Name	Length	Tab Order	Field Type
Barc0001	6	1	507
Text0002	8	2	503
Imag0003	12	3	506

Audit Files in On-Demand Printing

All the Loftware Label Manager print modules (On-Demand Print, Database Range Print and the Clients) have the ability to capture label information that is requested and printed.

Related Information
Information on Audit Files is found at the end of the *Customize* section of this guide.

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About Page Layouts in Loftware Label Manager

A page layout refers to a single sheet of labels or the number of labels produced before the label stock is ejected or advanced.

A page layout describes both the dimensions of your label stock and the number of labels printed on one page.

Labels that are ejected are typical of Windows printers such as the LaserJet, and labels that are advanced to the next page or group of labels are typical of thermal transfer or Windows printers such as continuous laser or dot matrix.

In the Loftware Label Manager design module, you attach or reference this layout description to your label format by using the File | Media Setup menu.

The Page Layout description defines:

- Label and page dimensions
- Gap and margin sizes
- Information on how many labels can fit across or down the page of your label stock

Loftware Label Manager provides a comprehensive set of tools for convenient management of your page layouts. For example, you can easily add new layouts, change existing ones or delete layouts that are no longer relevant.

Using Page Layouts

You use page layouts to lay out multiple labels (multi-up labels) when you wish to print:

- Two or more labels on a single sheet of label stock on a Windows printer, such as a LaserJet, DeskJet, bubblejet, dot matrix printer or any other Windows printer listed in the Control Panel.
- Multi-across labels on a roll of thermal or thermal transfer label stock.

Layouts are particularly useful if each label contains a serialized field or a field that contains unique database information. In these cases, you are able to use the full power of the Loftware Label Manager to obtain information from several, dissimilar sources of data, including:

- Local and remote databases
- Date/time fields
- Formulas
- Data files
- Incrementing/decrementing fields, including serial number files

For example, assume you need to create a small, narrow label used to serialize electrical circuit boards and you need to print a 4-up layout on a 3 by 4 inch section of thermal transfer label stock.

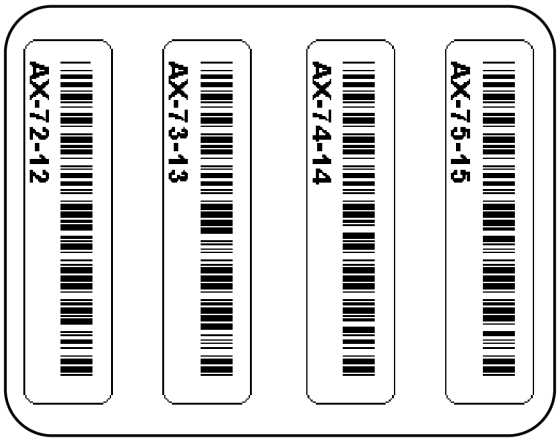

Figure 10.1: A serialized label printed 4-up on a thermal transfer printer

In this example, each label contains a single barcode field consisting of a serial number that has a prefix and two incrementing numbers side by side. Other typical layouts include matrix-style layouts such as the popular 8.5" x 11" sheets of 14-Up or 30-Up labels.

The Loftware Label Manager print modules (On-Demand Printing, Database Range Printing) can print labels in either row order (default) or column order.

The figures below display two examples of common page layouts.

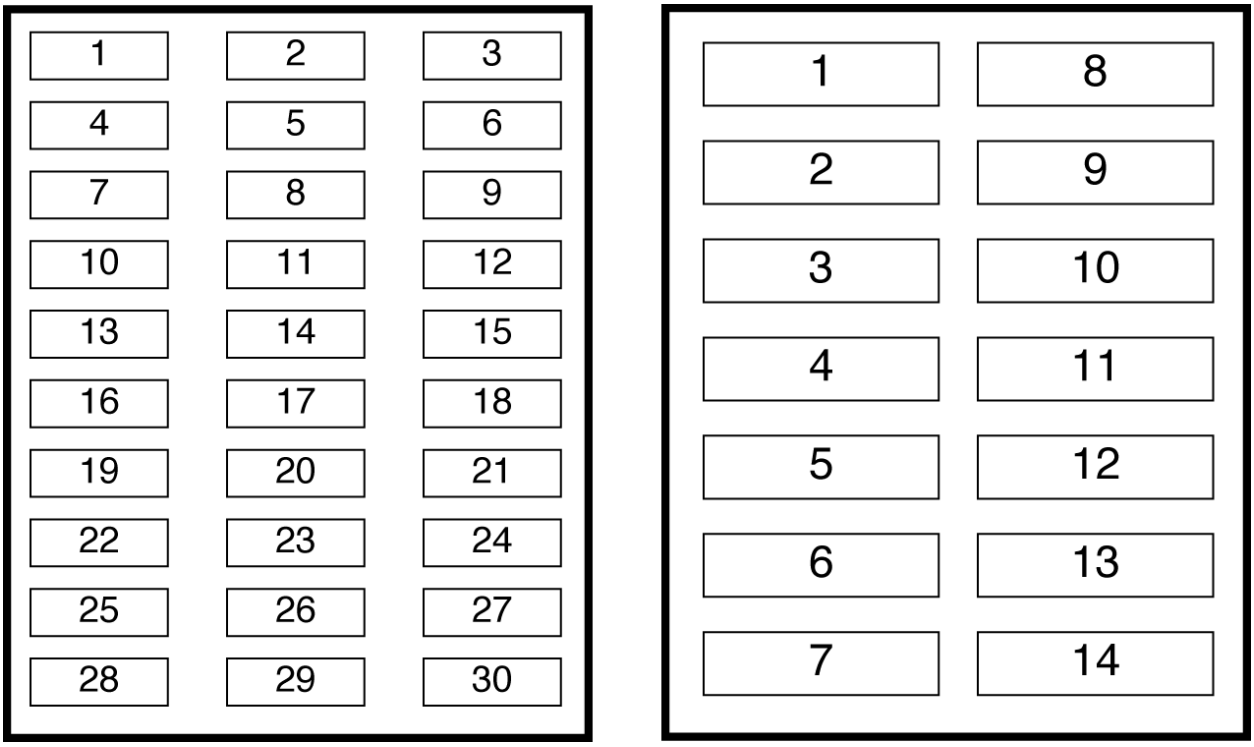

Figure 10.2: 30-Up label stock printing in row order, 14-Up label stock printing in column order

Labels similar to those shown here are typically found in office environments, but are increasingly used in applications requiring specific barcode information.

Where Page Layouts are Stored

Loftware Label Manager creates a page layout list based on file names in the LAYOUT subdirectory. To determine which folder is used for your page layouts, check Options | File Locations from any Loftware Label Manager module.

The page layout description is stored in layout files that feature the LWY extension. For example, a layout file for a barcoded shelf label might be named BCSHELF.LWY. If the correct layout subdirectory is not chosen, or it cannot be found by the printing module, the following error message is displayed: “Unable to load layout associated with label. No layout used”.

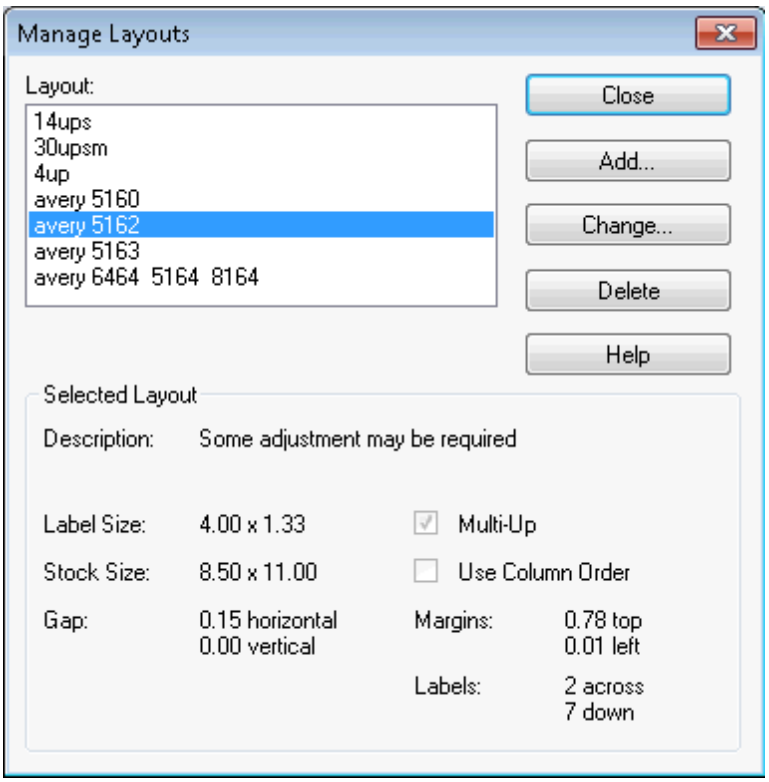

Figure 10.3: Label Setup dialog box with label format attached to Avery 5162 (14 up) labels

Managing Page Layouts

To access the Manage Layout dialog box:

- From the Loftware Label Manager design module, click the **Page Layout** tab under **File** | **Media Setup**. Alternatively, press **F5**, or select **Options** | **Layouts** from the Loftware Label Manager menu bar.

Note: Do not make a 1-up layout for your label. It is not necessary and causes the printer to go into extended mode at print time.

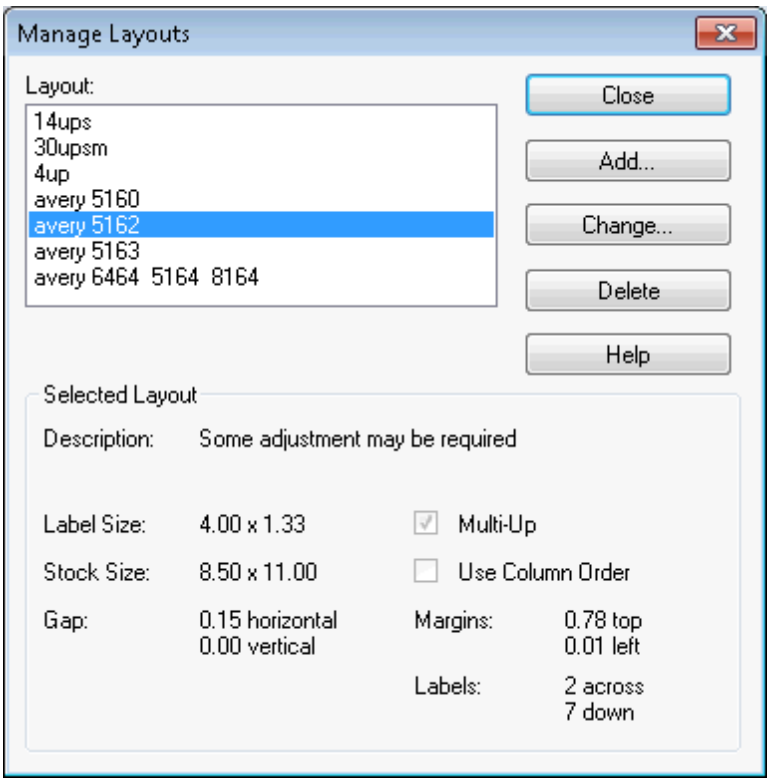

Figure 10.4: Manage Layouts Dialog Box

You can reference the starting label of a print job by using Loftware Label Manager printing applications (On-Demand, Database Range). Any subsequent page layout editing, however, must be done in the Loftware Label Manager design mode.

Note: The default page layout is NONE. Therefore, if you do not reference a page layout with your label, Loftware Label Manager prints just one label per page at print time. For most printing applications, this is the standard.

Attaching an Existing Page Layout to your Label Format

1. Open the label format to which you want to attach a page layout in Loftware Label Manager Design.
2. Select File | Media Setup.
3. Select a layout appropriate for your label from the **Layout** drop-down list.

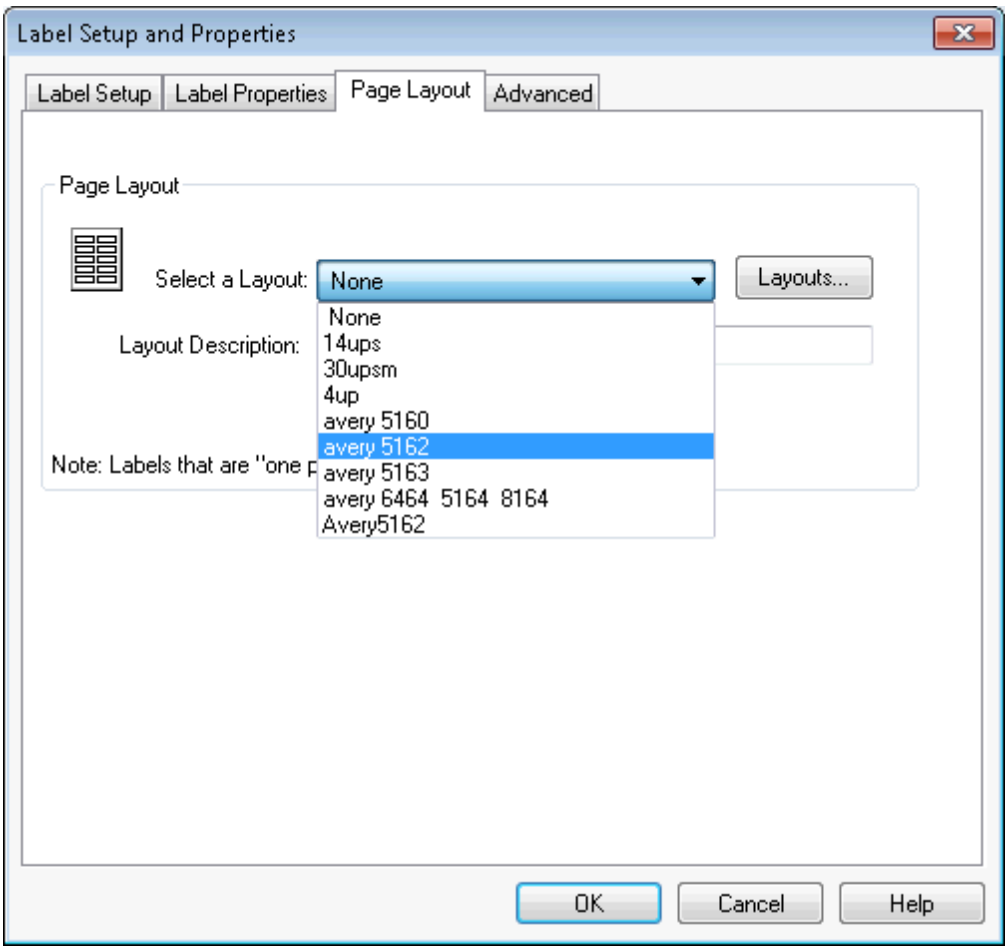

Figure 10.5: Selecting a Layout from Label Setup and Properties Page Layout Tab

If there are no layouts that apply for this label format, select the **Layouts** button and proceed to either add a new layout or change an existing one.

Modifying Page Layouts

Adding a Layout

- Click **Add** to add a new layout option; give your new layout a name (8 or less alphanumeric characters) and a meaningful description.

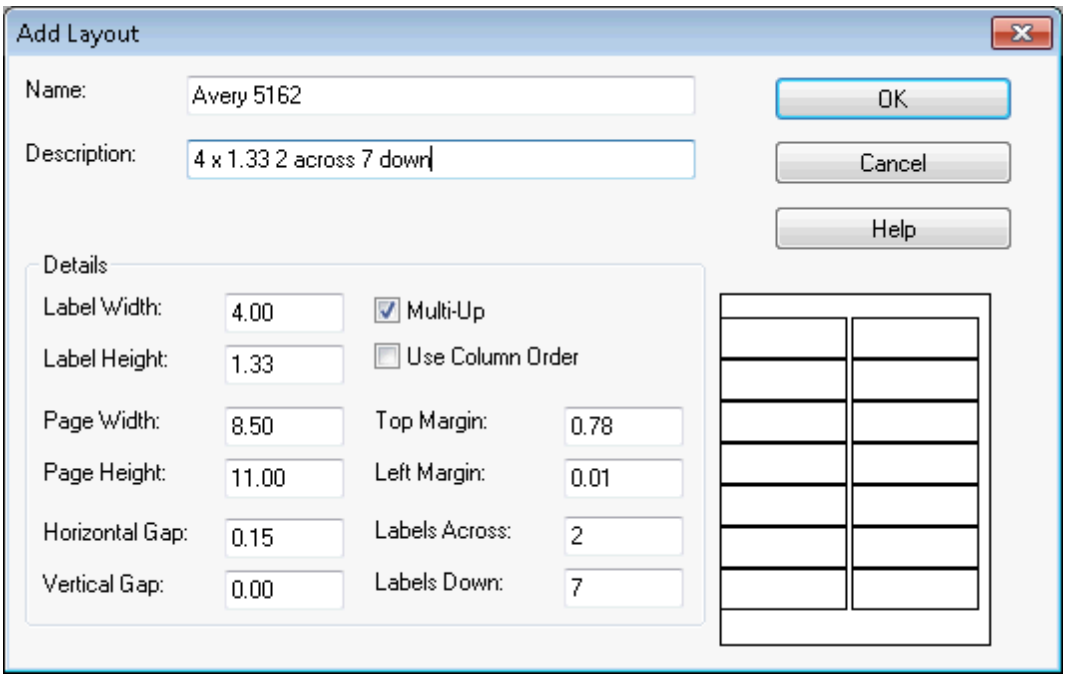

Figure 10.6: Add Layout dialog box

Changing an Existing Page Layout

Highlight the layout and click the Change button under the Manage Layout menu. The Change Page Layout menu is displayed and presents the same layout attributes (label width, page height) as the Add Page Layout menu. The Add or Change Layout dialog box contains all of the attribute details for your layouts. These include:

Layout Identification	
Layout Name	Name of the layout file using standard file names. Note: Loftware Label Manager automatically adds the "LWY" file extension
Layout Description	Provides a brief description of the layout used in the Manage Layout and Label Setup dialog box

Layout Detail	
Label Width	Width of label in default units (inches, centimeters, pixels, millimeters - these can be set in the Options | Units menu).
Label Height	Height of label in this layout.
Page Width	Width (from edge to edge) of your label stock.
Page Height	Height (from edge to edge) of your label stock.
Horizontal Gap	Horizontal spacing between labels.

Layout Detail	
Vertical Gap	Vertical spacing between labels.
Multi-Up	On/Off toggle for printing multiple labels on a single page or on a sheet of label stock.
Use Column Order	Orders labels through a row of columns that start from top left and proceed to bottom right. The default value is Row Order.
Top Margin	Margin from the top of label stock to the top of the first row of labels.
Left Margin	Margin from left of label stock to the left edge of first column of labels.
Labels Across	Number of labels across one page of label stock.
Labels Down	Number of labels down one page of label stock.

Deleting a Page Layout

From time to time, you may want to edit your layout list by deleting old layouts that are no longer required by your label printing applications.

1. Back up your current layout subdirectory.
2. Select the layout name that you want to delete from the Layout list.
3. Select the **Delete** menu option or press **Ctrl+ D**.
4. Respond to the **Are you sure want to delete layout: 4Up?** question.

Printing Using Page Layout

When you open a label with an attached layout, the Loftware Label Manager printing modules (On-Demand Print, Database Range Print) feature an additional **Layout** toolbar on the screen:

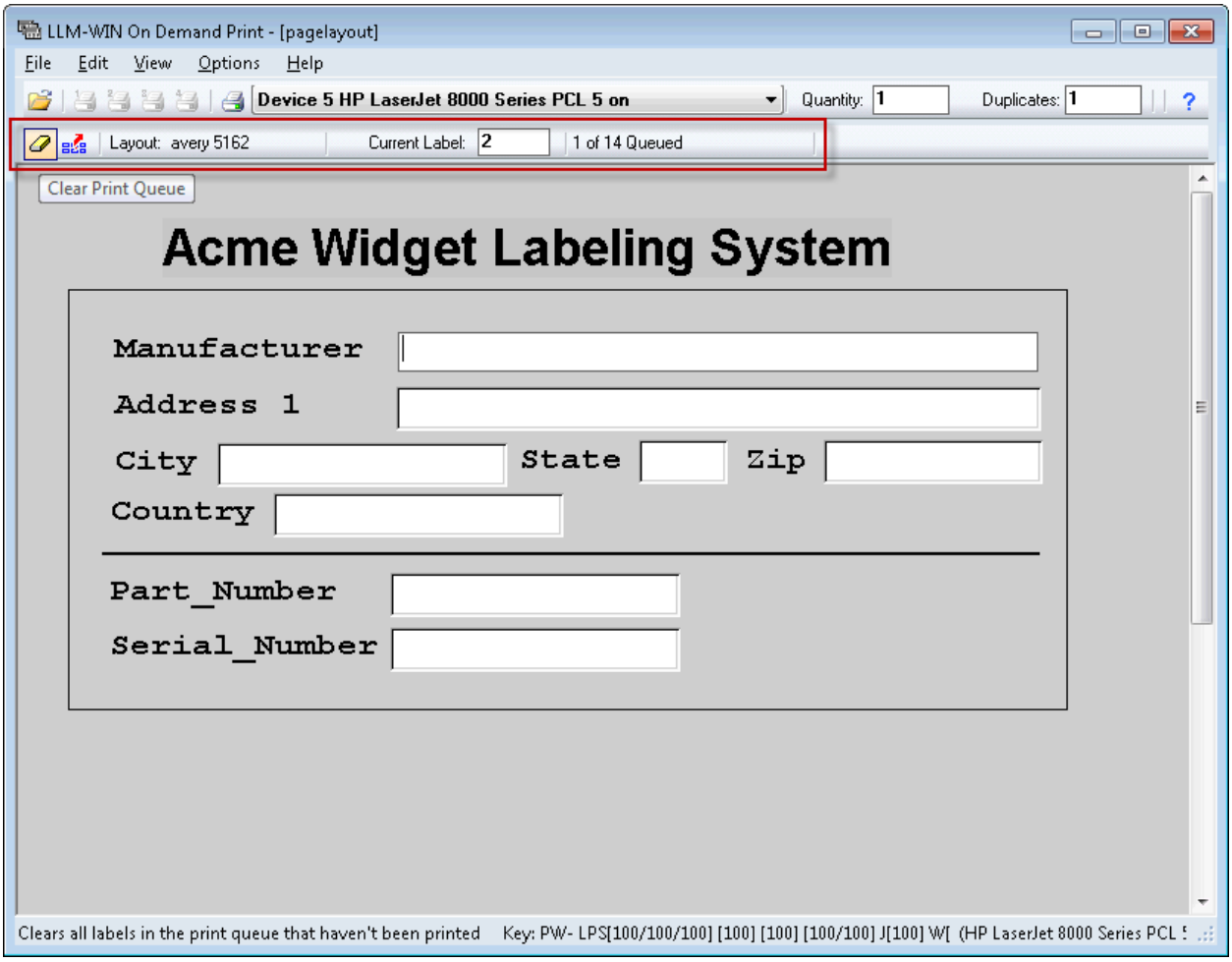

Figure 10.7: Page Layout Toolbar with Clear Print Queue and Eject Page Buttons

The layout toolbar provides valuable information about printing labels that use layouts. For example, at the far right of the toolbar, there is a queue counter, which tells you how many labels are currently in the print queue. This number is helpful when printing small labels up to large multi-up sheets of label stock. As you enter label data and select Print (by pressing **F9** or clicking **Print**), the queue counter reflects the change. As soon as a complete page of labels is in the queue, the page is automatically ejected from the printer.

You also see two button on the toolbar:

- Use the **Clear Print Queue** button to erase labels that are in the print queue but have not yet been printed.
- Use the **Eject Page** button to eject a partially printed page of labels.

These icons are identical to actions within the Options | Layouts menu.

Current Label

As mentioned in the previous section, the layout toolbar includes the print counter that references the current label on your layout. You can change the value by clicking the mouse pointer into the editing box or by pressing **F4**.

Here are two ways to use this option:

- You may find that a print job uses several sheets of label stock and finishes on the last sheet, but several labels on that sheet are unused. To re-use the label stock and print to the remaining labels, change the current label to reflect the label number you want to start printing. This number takes into consideration whether you are printing labels in row or column order. If you are queuing labels to print in an on demand mode, the current label counter increments to reflect the current position on your page of labels.
- Suppose you are printing to a sheet of label stock with 30 labels per sheet. You queue 15 and then realize that labels 12 through 15 contain incorrect information. By resetting the current label counter to 12, you effectively clear labels from 12 on. This allows the operator to re-key the label data for these labels.

Clear Previously Queued Labels

Clicking the **Clear Print Queue** button clears any labels that may be in the print queue that have not been printed. This assumes that you have queued a partial page of labels that have not been printed.

End of Job Action

If there is a partial page of labels queued when you open a new label format or you exit one of the Loftware Label Manager printing modules (On-Demand, Range Print), you are given the option of printing (and ejecting) the partial page of labels.

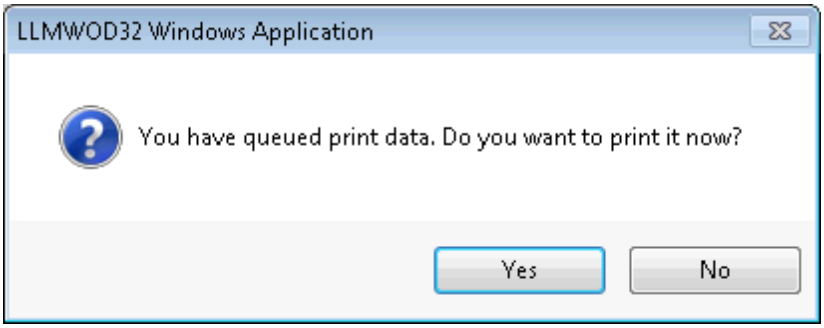

Figure 10.8: Print Queued Labels Dialog

Note: Clicking **No** results in clearing the queue of all labels that have not been printed.

Layouts and Pages

For increased printer throughput and speed, use the Page value in addition to quantity and/or duplicates. Select File | Print Preview to open the **Print Label Reset** window.

Note: This option is available only when your label is attached to a layout.

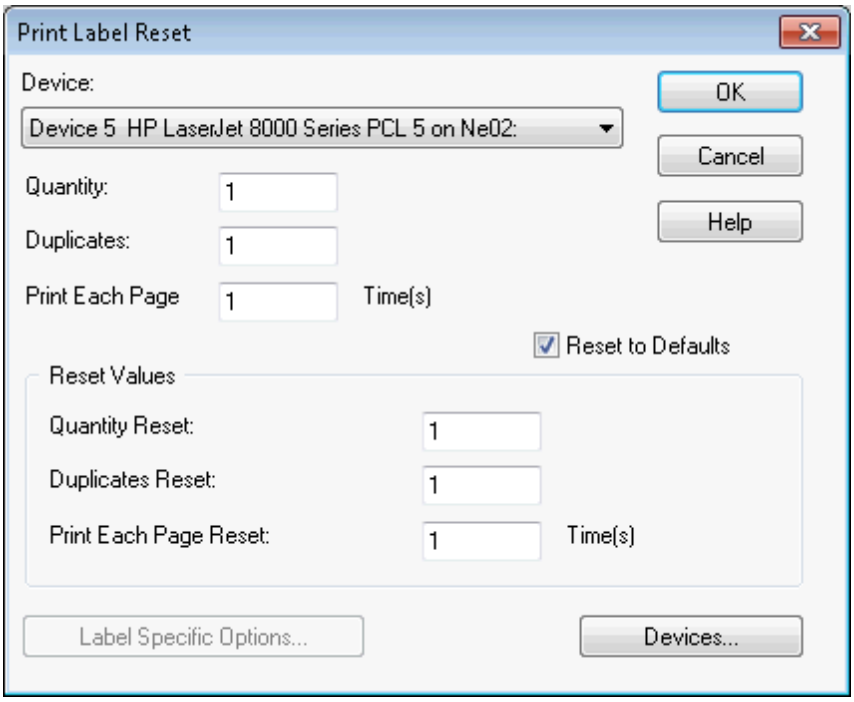

Figure 10.9: Print Label Reset Dialog Box

The concept of pages is especially relevant to on-demand, thermal printers. When a page value is used, Loftware Label Manager print modules image the entire multi-up label, send it to the printer once, and specify to the printer x-amount of pages.

Mixing Label Formats on a Page (Multi-Label Layouts)

Windows printers allow you to switch between different label formats while you fill a page layout. Follow these rules:

- Open a new label in Design and keep printing. The software keeps track of which box you are printing to and whether the page needs to be ejected.
- The label must be the same size as the label size specified in the layout.
- Do NOT mix label formats on a layout if you are using a thermal transfer printer.

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Range Printing extracts data for printing from another source. You must create a query that instructs Loftware Label Manager to print a selected group of records from a database. In addition, Range Printing is used only with labels that are attached to a database.

Within Range Printing, you can:

- Use the Query Assistant to select a range without using SQL queries.
- Create an SQL query and print a selected range of labels.
- Save queries for frequently printed ranges.
- Create an icon on the Windows desktop to run frequently used queries.
- Launch Range Printing from your own application, using command line parameters to control the printing process.
- Launch Range Printing remotely from Loftware's LPS utility program.

Related Information
For additional information regarding integrating the Loftware Print Server with your own applications, refer to *The Loftware Print Server* section of the *Loftware Print Server User's Guide*.

Range Printing Example

Assume that you are working with an inventory label named INVTAG.LWL that has the following fields attached to a database:

- Item number, attached to database field PARTNO
- Item description, attached to database field DESC
- The warehouse row location of the part, attached to database field ROW
- An illustration of the part, attached to database field IMAGE

You want to print a series of inventory labels for selected locations (for example Rows A through H), sorted by part number.

Range Print a Series of Labels

1. Select Start | All Programs | Loftware Labeling | Range Print 32
2. The Range Printing application is displayed and the file open dialog box is presented.
3. Select the label you wish to print, (in this case INVTAG.LWL), and click **OK**.

4. Define the Query in the Define Query dialog box following these steps:
   a. Click **Select From** in the Range group box.
   b. Set the **Select From** field to ROW.
   c. Set the **Starting Value** to A and the End Value: to H.
   d. Set the Field to PARTNO. Click **OK**.
5. Print labels by selecting File | Print or click the printer icon for the printer to which you want to print.

Labels That Can Be Range Printed

You can range print:

- Any label that is connected to a single database or relational database.
- Any label with one and only one database-key field (Get Value From = Keyboard).
- Any label connected to multiple databases if all databases share the same database key field. For multiple database connections, you can only select records using the key field.

Related Information
For more information on attaching a database to a label and creating a Database-Key, refer to the *Data Sources* section in this guide.

Creating a Query

Loftware Label Manager uses standard SQL queries to retrieve information from a database. Fortunately, you do not have to know anything about SQL to use Range Printing. Using the Query Assistant, you just specify the records you want to select and which field you want to sort on (if any) and the Query Assistant creates the SQL statements for you.

Accessing the Query Assistant

- Whenever you load a new label, Range Printing presents the Define Query dialog box.
- Use the Query | Define Query menu command.

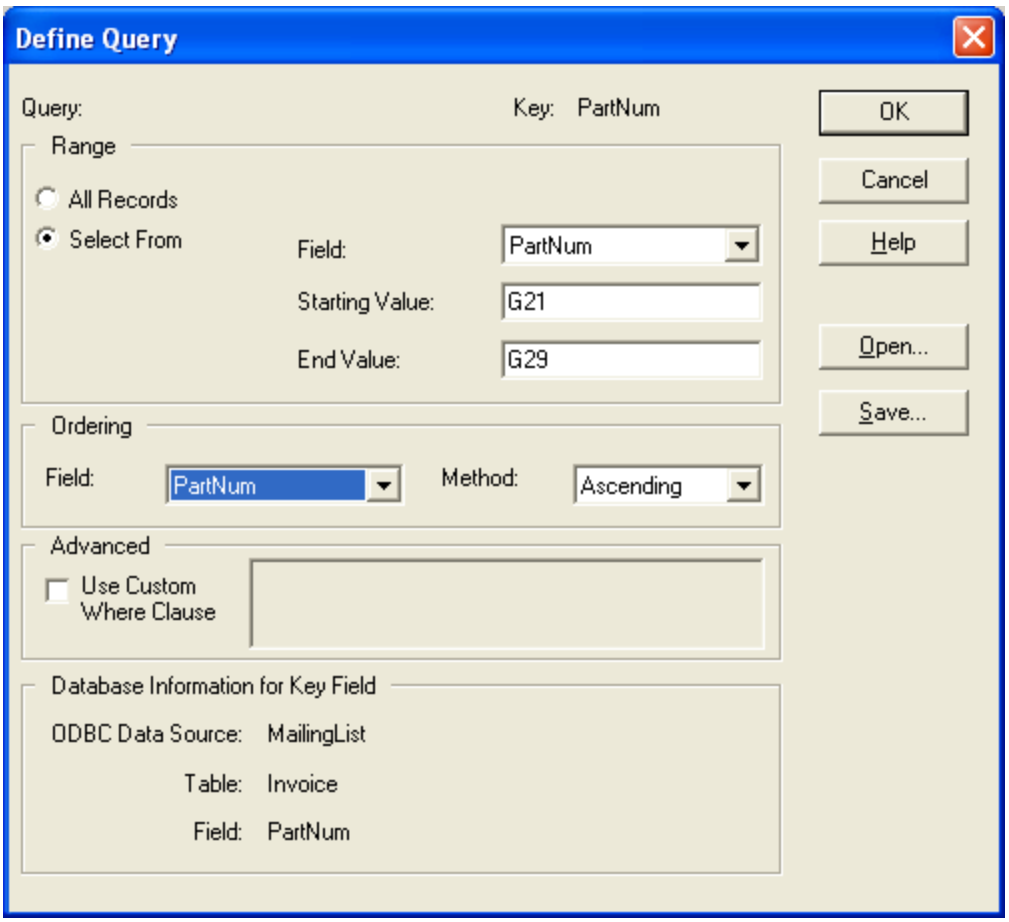

Figure 11.1: The Define Query dialog box

Range Section

Select the range of labels you wish to print. The default value is All Records. If you accept the default, Loftware Label Manager prints all of the records in the database. You can, however, select a discrete range for printing by choosing the Select From option. When you select this option, Loftware Label Manager allows you to define a range from a selected field on the label.

Choosing the Start and End Value of Select From Field

1. Choose the field from which you want the records to print. This can be different from the key assigned in label design. Only those fields in the database that are attached to the label are displayed in this list.
2. Enter a start value in the Start Value box. For example, type “A100” if you are beginning the print run with Part No. A100.
3. Enter an end value in the End Value box. For example, type “C300” if you are ending the print run with Part No. C300.

Ordering Section

The Ordering function allows you to arrange the sequence of your print run. For example, by part number in ascending or descending order. The default value (None) prints the records in the order that occur in the database.

- Select the appropriate Field that orders the print run from the list of available fields.
- Select Ascending or Descending, depending on how you wish your labels to print.

Advanced Section

Using a Custom Where Clause

If you have special needs, you can define your own SQL statements to determine which records are selected for printing.

- If you check the Use Custom Where Clause check box, the Select From range definition (in the Range group box) is not used.
- In this case, you can type a SQL statement into the Where Clause edit window, if you are familiar with the SQL language.

The following are examples of possible syntaxes of a Custom Where Clause written in Range Print when defining a specific query, using the Custom Where Clause option.

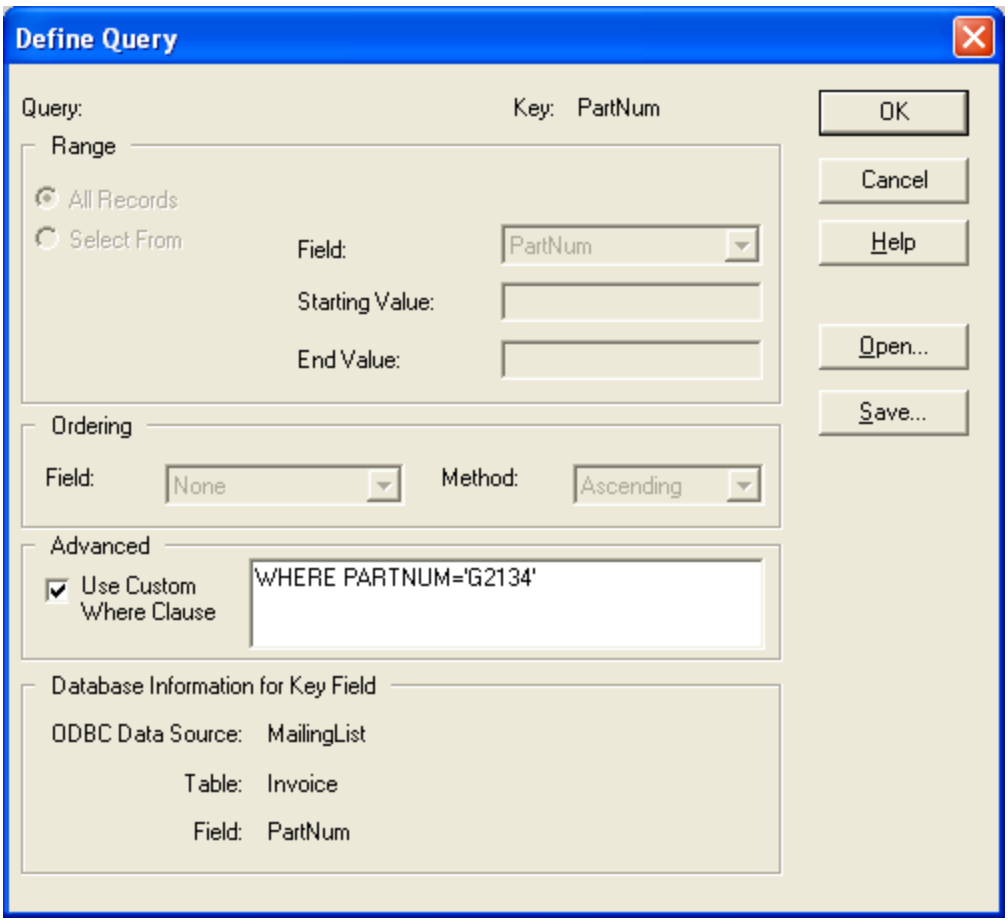

Figure 11.2: Using the Custom Where Clause

The database table used for this example is called Lesson2.database and it has a label with a database key field attached to the STOCKNUM column in the database. The following table displays the operators that could be used in the query and what they mean.

Operator	Comparison
=	Exactly Equal
LIKE	SQL LIKE
<> != #	Not equal
>	More than
>=	More than or equal to
<	Less than
<=	Less than or equal to

WHERE PARTNUM = 'A100'	Prints only the record A100
WHERE PARTNUM <> 'A100'	Prints all the records in the database except A100
WHEREPARTNUM >= 'A100'	Prints all records in the database including A100
WHERE PARTNUM='A100' OR PARTNUM='A300'	Prints record A100 and A300

Saving a Query

It is always a good idea to save your queries to avoid the need to reconstruct them again if you need to reprint the same labels in the Range Printing mode.

1. Click **Save** in the Define Query dialog box.
2. Enter a name for the query file, using .lwq as the filename extension.
3. Click **OK**.

Opening an Existing Query

To load an existing query:

- Click **Open** in the Define Query dialog box; select the appropriate file name from the list of .lwq files.

Automating the Range Printing Process

The Range Printing application supports several command line parameters that let you automate the printing process. Using these command line parameters, you can launch range printing without any operator intervention.

When you run Range Printing from your application or from a Windows program icon, the Command line parameters are specified after the program name.

Automated Range Print Examples

Example 1

```
LLMWRP32 invtag.lwl -Qinvtag.lwq
```

Runs the specified label and query and then exits the range printing application.

The range print application (LLMWRP32.EXE) recognizes the following command line parameters:

Command Line Parameter	Definition
label_filename	The name of the label to print.

Command Line Parameter	Definition
-Qquery_ filename	The name of the query to use.
-W "sql query"	A custom where clause must be enclosed in quotation marks.
-Pn	Assign range to printer n, where n is the printer number (for example, -P2 assigns the job to Printer No. 2).
-Nn	Sets the Quantity value to n (for example, -N3 produces three copies of the label).
-Dn	Sets the Duplicates value to n (for example, -D2 produces two duplicates of the label).
-M	Manual printing. Loads the label and the query and then waits for the operator to initiate printing.
-A	Maximize the application window using a command line.
-I	Minimize the application window using a command line.
-Rn	(non-interactive) Job Repeat count (for example, -R3 means job runs 3 times).
-E	Do not display Demo Mode warning screen message.
-J	Tells Range Print not to re-download formats and graphics. This saves throughput time when making back-to-back calls to Range Print modules with the same label format.

Example 2

```
LLMWRP32 invtag.lwl -Qinvtag.lwq -P1 -N2 -D1
```

Would load the invtag.lwl label and invtag.lwq query, set the selected printer to Printer 1, set Quantity to 2 and Duplicates to 1, print the entire selected range and then exit back to the calling program.

Create an Icon to Run Range Print

If you have a range print that must be run repeatedly, you can create an icon on the Windows desktop that the operator can use to run the range print by double clicking the icon.

For Example

Create a shortcut to Range Print that the operator double clicks to print a range of inventory labels. In this example the name of the label to print is INVTAG.LWL and the name of query is INVTAG.LWQ.

"C:\Program Files (x86)\Loftware Labeling\Llmwrp32.exe" INVTAG.LWL -INVTAG.LWQ

Note: Both a label name and query must be specified in the **Target** field of the shortcut's Properties.

Range Print Audit Files

Range Printing has the ability to capture label information that is requested and printed.

Related Information
To enable Audit Files, see the Audit Files section of the *Customize* section of this guide.

Automated Range Print Examples

Example 1
```
LLMWRP32 invtag.lwl -Qinvtag.lwq
```

Runs the specified label and query and then exits the range printing application.

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label_filename	The name of the label to print.
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-Pn	Assign range to printer n, where n is the printer number (for example, -P2 assigns the job to Printer No. 2).
-Nn	Sets the Quantity value to n (for example, -N3 produces three copies of the label).
-Dn	Sets the Duplicates value to n (for example, -D2 produces two duplicates of the label).
-M	Manual printing. Loads the label and the query and then waits for the operator to initiate printing.
-A	Maximize the application window using a command line.
-I	Minimize the application window using a command line.
-Rn	(non-interactive) Job Repeat count (for example, -R3 means job runs 3 times).
-E	Do not display Demo Mode warning screen message.
-J	Tells Range Print not to re-download formats and graphics. This saves throughput time when making back-to-back calls to Range Print modules with the same label format.

Example 2
```
LLMWRP32 invtag.lwl -Qinvtag.lwq -P1 -N2 -D1
```

Would load the invtag.lwl label and invtag.lwq query, set the selected printer to Printer 1, set Quantity to 2 and Duplicates to 1, print the entire selected range and then exit back to the calling program.

Create an Icon to Run Range Print

If you have a range print that must be run repeatedly, you can create an icon on the Windows desktop that the operator can use to run the range print by double clicking the icon.

For Example

Create an icon that the operator double clicks to print a range of inventory labels. The name of the label to print is INVTAG.LWL and the name of query is INVTAG.LWQ.

Range Print Audit Files

Range Printing has the ability to capture label information that is requested and printed.

Related Information
To enable Audit Files, see the Audit Files section of the *Customize* section of this guide.

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Note: If you are using the LPS, you may not need ODBC. Please refer to the *Loftware Print Server User Guide* for more information.

ODBC (Open Database Connectivity) is Microsoft's strategic interface for accessing data in an environment of relational and non-relational database management systems (DBMSs). ODBC allows applications to access multiple data sources without having to understand the underlying format of the data being read. It is through this mechanism that the Loftware system is able to access your data.

The standard Loftware setup program installs Microsoft Data Access Components (MDAC) which includes the following ODBC drivers: Microsoft Access, dBASE, Microsoft Excel, Microsoft FoxPro, Paradox, Text (CSV and Fixed Length), SQL Server, and Oracle. 16-bit drivers are not included. If your data is in a different format, such as DB2, Sybase, or Btrieve you must obtain a 32-bit ODBC driver that is compliant with your database. You can often find these drivers by contacting your provider or by searching on the Internet.

Note: During installation of a Loftware upgrade, the schema.ini file located in the <Program Files Folder>\Loftware Labeling\dbases\ folder is overwritten. The schema.ini file is used by ODBC for connectivity to text files. Several text files can share one schema.ini file, but there can only be one such ini file per folder. Because Loftware supplies sample text files for ODBC, the upgrade installation must update, and therefore overwrite, the schema.ini file located in the <Program Files Folder>\Loftware Labeling\dbases\ folder. It is therefore recommended that if you are using text files with ODBC, use a folder other than the <Program Files Folder>\Loftware Labeling\dbases\ folder.

ODBC manages databases through the use of registered data sources. A data source consists of a specific set of data (for example, a database), the information required to access that data, and the location of the data source.

Examples of Data Sources

- A directory containing a set of dBase files you want to access.
- An SQL Server database, the server on which it resides and the network used to access that server.
- A Microsoft Access database
- An Oracle database through a gateway to a Vax or AS/400

Connecting to a data source means establishing communications with a DBMS in order to access that data source's data. When you connect to a data source from an application through an ODBC driver, the driver makes the connection for you, either locally or across a network.

How Loftware Label Manager Uses ODBC

All databases are accessed using ODBC in Loftware Label Manager. The advantage of this is that Loftware Label Manager connects to any data source for which there is an ODBC driver.

Before you can use a database as a data source in Loftware Label Manager, you must set up an ODBC data source for the data. The Loftware setup program creates 4 sample data sources for you, each of which points to sample databases in the <Program Files Folder>\Loftware Labeling\dbases directory. These datasources can be viewed and changed from the ODBC control panel applet as described below.

- Loftware dBase Sample – Sample Data Source for dBase IV and V files
- Loftware Access Sample – Sample Access database
- Loftware Excel Sample – Sample Excel database
- Loftware Text Sample – Sample ASCII text databases

Related Information
If you are using the Loftware Print Server (LPS), data from your database is usually pushed to the LPS. Refer to the Data Push section in the *Loftware Print Server Users Guide*.

ODBC Data Source Administrator

Select Start | All Programs | Loftware Labeling | Data Sources (ODBC) to open the ODBC Data Source Administrator window. All Datasource editing is done from this window.

There are several different categories of data sources: User, System, and File.

Note: The following figure displays the Administrator dialog box after several User Data Sources have been added.

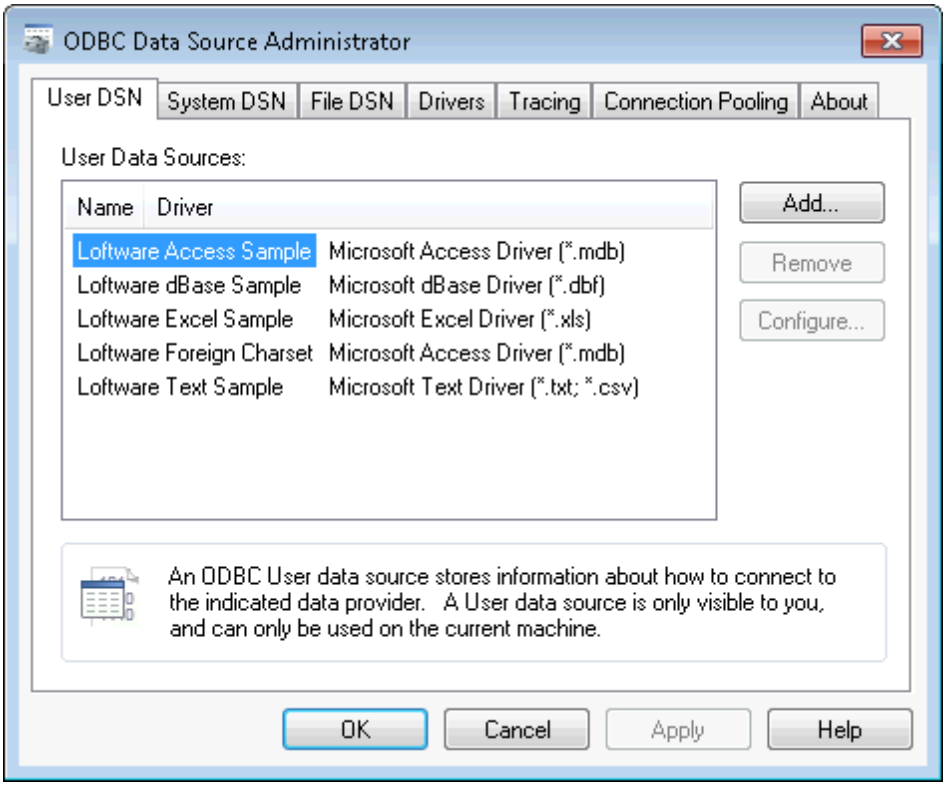


Figure 12.1: ODBC Data Source Administrator Screen

Related Information
For information on how to configure data sources, refer to Adding a Data Source section of this guide.

User Data Source Tab (User DSN)

Adds, deletes, or sets up data sources with User DSNs. (DSN = Data Source Name). These data source configurations are local to a computer, and may only be used by the current user.

Note: A networked database can be accessed with a User DSN.

Option/Button	Description
User Data Sources List	A list of all user DSNs that includes the name of each DSN and the driver associated with the DSN. Double-clicking a user DSN displays the driver-specific data source setup dialog box.
Configure	Displays the driver-specific data source setup dialog box that enables you to change the configuration of an existing user data source. You must select the name of a user data source from the list before clicking **Configure**.
Add	Adds a new user data source. If you click **Add**, the **Create New Data Source** dialog box is displayed with a list of drivers. Choose the driver for which you are adding a user data source. After you click **Finish**, a driver-specific setup dialog box is displayed.
Remove	Removes an existing user data source. You must select the name of the user data source you want to remove from the list before choosing the Remove button.

Option/Button	Description
OK	Closes the Administrator dialog box. **OK** does not have to be pressed to accept changes to the User Data Sources list. Changes to the list have already been accepted once **OK** in the data source setup dialog box has been pressed.
Cancel	Closes the Administrator dialog box. Note that changes to the User Data Sources list are not rejected if **Cancel** is clicked.
Help	Displays the Microsoft ODBC Help screen.

System Data Source Tab (System DSN)

Adds, deletes, or sets up data sources with system DSNs. These data source configurations are local to a computer, but are not dedicated to a user. The system, or any user having privileges, can use a data source set up with a system DSN.

Note: A networked database can be accessed with a System DSN.

Option/Button	Description
System Data Sources List	A list of all system DSNs that includes the name of each DSN and the driver associated with the DSN. Double-clicking a system DSN displays the driver-specific data source setup dialog box.
Configure	Displays the driver-specific data source setup dialog box that enables you to change the configuration of an existing system data source. You must select the name of a system data source from the list before the **Configure**.
Add	Adds a new system data source. If you choose this button, the Create New Data Source dialog box is displayed with a list of drivers. Choose the driver for which you are adding a system data source. After you **Finish**, a driver-specific setup dialog box is displayed.
Remove	Removes an existing system data source. You must select the name of the system data source you want to remove from the list before choosing **Remove**.
OK	Closes the Administrator dialog box. **OK** does not have to be pressed to accept changes to the System Data Sources list. Changes to the list have already been accepted once **OK** in the data source setup dialog box has been clicked.
Cancel	Closes the Administrator dialog box. Note that changes to the User Data Sources list are NOT rejected if **Cancel** is clicked.
Help	Displays the Microsoft ODBC Help screen.

File Data Source Tab (File DSN)

Note: Loftware Label Manager does not support File DSNs. Use System and User DSNs.

ODBC Drivers Tab

Displays information about the installed ODBC drivers. The ODBC Drivers list shows you which drivers are already installed on your computer.

Option	Description
ODBC Drivers List	Displays the name, version, company, file name, and file creation date of each ODBC driver installed on the computer.
OK	Closes the Administrator dialog box.
Cancel	Closes the Administrator dialog box. **Note:** This dialog box does not include the functions to Add or Delete. An ODBC driver must be added or deleted through the driver's setup program.
Help	Displays the Microsoft ODBC Help screen.

Tracing Tab

Enables you to specify how the ODBC Driver Manager traces calls to ODBC functions. The Driver Manager can trace calls all of the time, for one connection only; dynamically; or can allow tracing to be performed by a custom trace DLL.

Note: Tracing is typically only used for troubleshooting ODBC connections. Most Loftware Label Manager users do not need to enable tracing.

Option/Button	Description
Machine-wide tracing for all user identities	If selected, tracing is automatically performed at all times, for all connections on the machine.
Start Tracing Now	Enables dynamic tracing that is performed as long as the ODBC Administrator dialog box is displayed. Dynamic tracing can be enabled whether a connection has been made or not. After it is clicked, **Start Tracing Now** is replaced by **Stop Tracing Now**. When **Stop Tracing Now** is clicked, or the **ODBC Administrator** dialog box is closed, dynamic tracing is disabled.
Log file path	Displays the path and file name for the file that stores the tracing information. The default path and file name (sql.log) are taken from the system information, but a new file is specified by either entering a new path and file name, or choosing the **Browse** button and selecting a directory and file.
Browse	Allows you to select the path and file name for the log file by browsing machine directories.
Custom Trace DLL	This control allows the user to select a trace DLL other than odbctrac.dll to perform tracing. The odbctrac.dll file that is shipped with the ODBC SDK can be replaced by a custom DLL of the user's choice. Enter the path and file name of the custom DLL, or click **Custom Trace** to browse the directories for the custom DLL.
Custom Trace	Allows the user to browse the directory structure for a custom trace DLL. When a DLL has been chosen, the path and file name of the DLL are entered in the **Custom Trace DLL** text box.

Option/Button	Description
OK	Accepts changes to tracing and closes the Administrator dialog box.
Cancel	Closes the Administrator dialog box without accepting changes to tracing.
Apply	Accepts any changes that have been made to tracing without closing the Administrator dialog box. The **Apply** button is grayed if no changes have been made.

Working with Data Sources

Adding a Data Source

1. Select Start | All Programs | Loftware Labeling | Data Sources (ODBC).
2. Select **Add** in the **Data Sources** dialog box
3. Select the driver's name from the installed ODBC Drivers list in the Add Data Source dialog box and click **OK**. If the driver for the Data Source you are trying to add is not there, go back to the ODBC installation program and install it.
4. Enter information to set up the data source in the ODBC Setup dialog box.

Note: Description entry is optional and cannot exceed 79 characters.

Adding a System Data Source

A data source can be set up with a system data-source name (DSN) that can be used by more than one user on the same machine. The system DSN can also be used by a system-wide service, which can then gain access to the data source even if no user is logged onto the machine.

1. Choose Start | All Programs | Loftware Labeling | Data Sources (ODBC).
2. Choose the System DSN button in the Data Sources dialog box
3. Click **Add** in the **System Data Sources** dialog box.
4. Select the driver's name from the installed ODBC Drivers list in the Add Data Source dialog box and click OK.
5. Enter information to set up the data source in the ODBC Setup dialog box, and click **OK**.

Note: The Description entry cannot exceed 79 characters.

Modifying a Data Source

1. Choose Start | All Programs | Loftware Labeling | Data Sources (ODBC).
2. Select the data source from the **Data Sources** list in the **Data Sources** dialog box, and click **Configure**.
3. Enter information to set up the data source in the **ODBC Setup** dialog box.

Note: Description entry is optional and cannot exceed 79 characters.

Deleting a Data Source

1. Choose Start | All Program Files | Loftware Labeling | Data Sources (ODBC).
2. Select the data source from the Data Sources list in the **Data Sources** dialog box.
3. Click **Remove**, and then click **Yes** to confirm the deletion.

Data Source Conversion

The 32-bit data sources used with the ODBC Desktop Database Drivers version 2.0 are automatically converted to new 32-bit data sources for version 3.5 drivers. No conversion is provided for 16-bit data sources. To change a 16-bit data source to a 32-bit data source, create a new 32-bit data source, and then (optionally) delete the old 16-bit data source. A 32-bit data source and a 16-bit data source cannot share the same name.

Hints and Troubleshooting ODBC

- If you are moving your label from one computer to another, and it is connected to an ODBC datasource, make sure that the computer you are moving to has the exact same datasource name in the ODBC Control Panel. If you are unsure of what datasource name was used, you may double click a field on your label that is connected to a database in design mode. The datasource name, table, and field are reported.
- Datasource names are not case sensitive.
- Be aware of illegal and reserved datasource names. Stay away from names like Table, Field, Database, and Text. Do not include special characters like \ , . - +.
- If you get a Type Mismatch error when retrieving data, it means that the field column type in the database has changed since the connection was made. Reconnect the associated field on your label.
- Do not create a subdirectory with the same name as your database under the directory in which your database resides. This creates a "Couldn't open file unknown" message.
- If using Microsoft Access, make sure that you have checked Read/Design permissions. If they are not checked, you may get a situation where you can see table names but no field names.
- Avoid using ODBC indexes whenever possible.
- When first choosing a datasource, you may get an error message. Continue by clicking either **OK** or **Cancel**, and try to reconnect to your database. Loftware Label Manager always accesses the first DSN by default. If the DSN is not valid, a warning alerts you to choose another DSN. The chosen DSN becomes the default DSN after connecting to your database.
- Records added to the database from an external location while printing from another may not be immediately available to the Loftware print modules.

- If you are using the Database-Image datasource and you get a message saying that the image is not found, try making the field length property of the image field 12 or more characters.
- DOUBLE database fields are rounded to six decimal places.

See the Loftware Knowledge Base at www.loftware.com for information regarding ODBC, such as error messages, reserved words and more troubleshooting hints.

Loftware supports the following bar code symbology. Not all symbology are supported on all printers. If Loftware Label Manager does not support a symbology, it will not appear in the **Symbology** drop-down field.

See the documentation for your printer for information on native symbology support.

Note: The bar code properties described in this section are provided as a supplement to your printer's user guide or programming manual and the specification for the bar code.

Supported Symbology	Options	Notes
Aztec Code	Aztec Code Properties	
Code 39	Code 39 and Code 39 (FULL ASCII) Properties	
Code 39 (Full ASCII)		
Code 93	Code 93 and Code 93 (FULL ASCII) Properties	
Code 93 (Full ASCII)		
Code 128	Code 128 Properties	
DataMatrix	DataMatrix Properties	
EAN 8	EAN 8 and EAN 13 Properties	
EAN 13		
HIBC Primary (Code 39)	HIBC Primary and Secondary Properties	Available on Intermec printers using IPL
HIBC Secondary (Code 39)		Available on Intermec printers using IPL
Interleaved 2-of-5	Interleaved 2-of-5 Properties	
micro PDF417	micro PDF417 Properties	
PDF 417	PDF 417 Properties	
POSTNET	No Properties Available	
QR Code	QR Code Properties	Does not support FNC1 modes. Does not support Extended Channel Interpretation (ECI) mode

Supported Symbology	Options	Notes
GS1 Databar	GS1 DataBar and GS1 DataBar Composite Properties	
GS1 Databar Composite		
TLC39	TLC39 Properties	
GS1-128 Generic	GS1 Generic Properties	
GS1-128 SSCC	GS1 SSCC Properties	
UPC-A	UPC-A and UPC E 6 digit Properties	
UPC E 6 digit		
UPS MaxiCode	UPS MaxiCode Properties	
USPS Intelligent Mail	USPS Intelligent Mail	

Unique Barcode Properties

Several Loftware Label Manager editing features are unique to barcode fields. Here are some suggestions that may help you get the most out of the barcode editing functions when using Properties boxes:

- **Interdependent Properties:** Some properties are dependent on other properties for their values. For example, when you change the Line Width property on a barcode, the X-Dimension value and % Nominal value (if available) change automatically.
- **% Nominal:** For some barcode symbologies, (For example, the EAN and UPC series), a "% Nominal" property is available. Some printers can only print values that fall within a specified range (For example, 37%, 75%, 113%, 150% of nominal).

For more information on your printer's print density or dot size, refer to your printer documentation.

Barcode Symbology Terminology

The following terms may be useful to understand as you go through the following section.

Term	Description
ANSI	American National Standards Institute, a non-governmental organization responsible for the coordination of voluntary national (United States) standards.
Application Identifier (AI)	A specified string of characters that defines the general category or intended use of the data that follows. Originally designed as numeric identifiers to take advantage of the numeric compaction feature of GS1-128 (Formerly UCC-128).

Term	Description
Barcode	An array of parallel rectangular bars and spaces arranged according to the encodation rules of a particular symbol specification in order to represent data in machine-readable form. For the purposes of this guideline the term "bar code" includes linear (for example, Code 39 and Code 128), two-dimensional (for example, Data Matrix and MicroPDF417), and composite (for example CC-A linked to GS1 DataBar Omnidirectional) machine-readable symbols.
Barcode Character	A single group of bars and spaces that represent an individual letter, number, punctuation mark or other symbol.
Barcode Density	The number of data characters that can be represented in a linear unit of measure. Barcode density is a function of the "X" dimension, element width ration, and intercharacter gap.
Barcode Symbol	An array of rectangular bars and spaces that are arranged in a predetermined pattern following specific rules to represent elements of data that are referred to as characters. A bar code symbol contains a leading quiet zone, start pattern data character(s) including a check character (if any), stop pattern, and a trailing quiet zone.
Bar Height	The bar dimension perpendicular to the bar width. Also called bar length.
Bar Width	The perpendicular distance across a bar measured from a point on one edge to a point on the opposite edge. Each point will be defined as having a reflectance that is 50 percent of the difference between the background and bar reflectance.

Character

Term	Description
Data Character	A letter, digit, or other member of the ASCII character set.
Symbol Character	A unique bar and/or space pattern, or a dark and light cell pattern, which is defined for a specific symbology. There is not necessarily a one-to-one unique correlation between symbol characters and data characters. Depending on the symbology, symbol characters may have a unique associated symbol value.
Character Set	Those characters available for encodation in a particular automatic identification technology.
Check Character	A digit or character calculated from the data and appended as part of the data string to insure that the data is correctly composed and transmitted.
Code 39	The 3 of 9 bar code is a variable length, discrete, self-checking, bidirectional, alphanumeric bar code. Its character set contains 43 meaningful characters: 0-9, A-Z, -, ., $, /, %, *, and space. Each character is composed of nine elements: five bars and four spaces. Three of the nine elements are wide (binary value 1), and six elements are narrow (binary value 0). The character (*) is used for both start and stop character.

Term	Description
CLEI™ Code	COMMON LANGUAGE Equipment Codes. A 10-character coding structure maintained by Telcordia® Technologies that identifies communications equipment, in a concise, uniform feature-oriented language, describing product type, features, source document and associated drawings and vintages.
Data Field	The specific portion or area of a label designated to contain human readable, bar code or graphic information.
Data element separator	A specified character used to delimit discrete fields of data.
Data Identifier (DI)	A specified character string which defines the specific intended use of the data that immediately follows. The identifier shall be an alphabetic character or an alphabetic character preceded by up to three numeric characters as defined by ANSI.
Global Trade Item Number (GTIN)	The Global Trade Item Number is used in GS1 System for the unique identification of trade items. A trade item is any item (product or service) upon which there is a need to retrieve pre-defined information that may be priced, ordered or invoiced at any point in any supply chain. This includes individual items as well as their different types of packages. The GTIN is defined as a 14-digit number to accommodate the different structures.
Human-readable Interpretation	The letters, digits or other characters associated with specific symbol characters and printed along with the linear bar code, two-dimensional symbol, or RFID Tag.
Module	In a linear or multi-row bar code symbology, the nominal unit of width in a symbol character. In certain symbologies, element widths may be specified as multiples of one module. This is equivalent to X dimension.
Overhead characters	Those characters included within a symbol that are not data characters, for example, start, stop, error checking, concatenation, and field identifier characters.
Quiet Zone	Areas of high reflectance (spaces) surrounding the machine-readable symbol. Quiet zone requirements may be found in application and symbology specifications. Also called the Clear Area or Margin.
Standard Product Identification	The numbering scheme used to uniquely identify a product for reference among all participants of the supply chain. More simply put, it is the one number that is used by all members in the supply chain to reference that particular product.
Structure	The order of data elements in a message.
Symbol	A machine readable pattern typically comprised of quiet zones, start/stop or finder pattern(s) and symbol characters (which include special function and error detection and/or correction characters) required by a particular symbology.

Term	Description
Syntax	The way in which data is put together to form messages. Syntax also includes rules governing the use of appropriate identifiers, delimiters, separator character(s), and other non-data characters within the message. Syntax with Barcodes and RFID Tags is the equivalent to grammar in spoken language.
Unique Serial Identification	A series of alphanumeric characters which consists of two segments, the manufacturer identification segment and the serial number segment. The combination of these two segments ensures uniqueness within a company. See the TCIF document TCIF-98-005, Product Serialization Guideline, for additional information.
Universal Product Code (UPC)	The Universal Product Code is 12 characters in length and contains: (1) a number unique to the manufacturer assigned by the Uniform Code Council (UCC), (2) the product number assigned by the manufacturer (or owner of the label) and (3) a check character.
X Dimension	The specified width of the narrow element (bar or space) in a bar code symbol.

Printing Non-Native Barcode Symbologies

Printing certain barcode symbologies can be a challenge given that not all printer models have the ability to support all symbologies. If the printer has the ability (appropriate firmware), Loftware sends the barcode to the printer, and it prints natively. Because not all Loftware supported printers have the appropriate firmware, Loftware has created the ability to add certain barcodes to a label as bitmaps. This means that these barcode symbologies can be printed despite not being natively supported by the printer.

At this time, Loftware supports sending non-native barcode symbologies as bitmaps to all printer families. The ability to send certain barcode symbologies natively is supported in some Printer Families.

Printing may be slower when sending barcodes as bitmaps, but the barcode symbology can be printed to any printer despite the lack of printer support.

Aztec Code Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Cell Width	The symbol's module (or cell) height in printer pixels (dots).	1-10 Pixels
Error Correction	The level of error checking and correction employed in the symbol.	Auto 1-99 - Error Correction level in percentage.

Property	Description	Values
Symbol Size	The number of rows and columns in the symbol.	Auto A range of options

Building Aztec Code Barcodes

1. Create a bar code.
2. From the **Properties** window, select **Aztec Code** from the **Symbology** field.
3. Set the properties for your bar code.

Code 39 and Code 39 (FULL ASCII) Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The height of the barcode.	Decimal
Check Digit	Add an optional check digit to the barcode. The listed check digits are optional forms of the selected symbology (For Example: Code 39 or Code 39 with check). Special purpose check digits can be added to the barcode using the Formula data source.	None Mod 43 Validate User Entered Mod 43
Data Identifier	Data entered in this field will be encoded in the barcode but will not print in the human readable text field for the barcode. Data Identifiers are used to help the scanner identify the field. **For Example** For an AIAG label, a barcode with a data identifier of P contains a part number, a data identifier of Q signifies a quantity field and a data identifier of S signifies a serial number field.	
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating

Property	Description	Values
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-16 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	003.3 to 066.0 mil in set increments
Ratio	The ratio of the wide bar to the narrow bar. The ratio can be used to create 'in between' sizes between different X-dimensions. **For Example** For Ratio 3:1, the wide bars are three times the size of the narrow bars.	2.0:1 to 3.0:1 in .1 increments
Show Start/Stop	Specifies if the Start/Stop character is to be displayed in the human readable text for the barcode.	Yes/No

Code 93 and Code 93 (FULL ASCII) Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The vertical measurement of the barcode.	Decimal
Data Identifier	Data entered in this field will be encoded in the barcode but will not print in the human readable text field for the barcode. Data Identifiers are used to help the scanner identify the field. **For Example** For an AIAG label, a barcode with a data identifier of P contains a part number, a data identifier of Q signifies a quantity field and a data identifier of S signifies a serial number field.	

Property	Description	Values
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-20 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	003.3 to 165.0 mil in set increments
Show Start/Stop	Specifies if the Start/Stop character is to be displayed in the human readable text for the barcode.	Yes/No

Code 128 Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The height of the barcode.	Decimal
Check Digit	Add an optional check digit to the barcode. The listed check digits are optional forms of the selected symbology (For Example: Code 39 or Code 39 with check). Special purpose check digits can be added to the barcode using the Formula data source.	None Mod 43 Validate User Entered Mod 43

Property	Description	Values
Data Identifier	Data entered in this field will be encoded in the barcode but will not print in the human readable text field for the barcode. Data Identifiers are used to help the scanner identify the field. **For Example** For an AIAG label, a barcode with a data identifier of P contains a part number, a data identifier of Q signifies a quantity field and a data identifier of S signifies a serial number field.	
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ▪ Line: X-Dim ▪ Line %-Nominal	1-16 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ▪ Line: Width. ▪ Line:%-Nominal	003.3 to 066.0 mil in set increments
Show Start/Stop	Specifies if the Start/Stop character is to be displayed in the human readable text for the barcode.	Yes/No

Property	Description	Values
Start Code	Specify the subset for the Code 128 barcode.	▪ Auto: Printer selects subset Code A Uppercase letters, numbers and control characters. ▪ Start A: ASCII characters 00 to 95 (0-9, A-Z and control codes), special characters, and FNC 1-4 ▪ Start B: ASCII characters 32 to 127 (0-9, A-Z, a-z), special characters, and FNC 1-4 ▪ Start C: 00-99. Code C is a double density barcode and produces the smallest barcode. ▪ Start UCC: Inserts Function 1 (FNC1). Numbers only, leaves parentheses and spaces in human readable.

Building GS1-128 (Formerly UCC-128) Barcodes

Most thermal printers today include a GS1-128 SSCC (Serial Shipping Container Code) symbology option. This barcode symbology is available in all Loftware Label Manager printer drivers. As a minimum, this code is a Code-128 barcode that includes a FNC1 character, an application identifier, user data, and two check digits (a Modulus 103 and a Modulus 10 check character).

GS1 Barcode

To build other GS1 barcodes, such as the SCC-14, Loftware Label Manager provides Code-128 attributes available in the **Properties** box in Loftware Label Manager. These attributes provide the tools to build a GS1 barcode for any printer defined in Loftware Label Manager that includes both the barcode data and

human readable interpretation with one set of entered data. However, Loftware recommends that you use the **GS1 Barcode Wizard** to create all Barcodes.

1. Select Code 128 **Symbology**.
2. Select **UCC Mod 10** from the **Check Digit** field to add a modulus 10 to the end of the barcode. This option strips out parentheses and spaces in your data before calculating the Check Digit. For example, if you enter from the On-Demand Print form (00) 0 0012345 5555555555, "00012345555555555" is used as the data to calculate the Check Digit. Notice the (AI) Application Identifier (00) is excluded from the data when calculating the Mod 10 Check Digit.

Note: Like all Code 128 barcode symbologies, the Mod 103 Check Digit is automatically added to the end of the barcode field.

3. Select **Start UCC** from the **Start Code** field. This option prefixes the Code 128 barcode with a Start Code C option and a FNC1 character.

Related Information
For information on the Barcode Wizard, refer to the Templates and Wizards section of this guide.

DataMatrix Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Cell Width	The symbol's module (or cell) height in printer pixels (dots).	Pixels
Error Correction	The level of error checking and correction employed in the symbol.	ECC 0 ECC 50 ECC 80 ECC 100 ECC 140 ECC 200

Property	Description	Values
Format ID	Defines the type of data that may be encoded in the symbol.	1 - Numeric digits 0 to 9 and the space character 2 - Upper case alpha A-Z and the space character 3 - Upper case alphanumeric A-Z, 0-9 and the space character 4 - A-Z, 0-9, space, minus, period, comma & forward slash (/) 5 - 7 bit ASCII - all ASCII characters between ASCII to ASCII 127 6 - 8 bit ASCII - all ASCII characters between ASCII 0 to ASCII 255
Symbol Size	The number of rows and columns in the symbol.	Square Form: 10 - 144 Rows and Columns Rectangular Form: 8 - 16 Rows 18-24 Columns

EAN 8 and EAN 13 Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The height of the barcode.	Decimal
Extension	Specify whether a 2 or 5 digit extension is to be used. UPC extensions are used to extend the range of available part numbers that can be encoded.	None +2 +5
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Fixed Below
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ▪ Line: X-Dim ▪ Line %-Nominal	1-20 Pixels

Property	Description	Values
Line: % Nominal	The barcode's module width as a percent of nominal tolerance. UPC/EAN barcodes have a nominal module width of .0013". This property is related to: ■ Line: X-Dim ■ Line:Width	25-1269%
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	003.3 to 066.0 mil in set increments

HIBC Primary and Secondary Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Note: HIBC Primary (Code 39) and HIBC Secondary (Code 39) symbology are only available on certain Intermec printers.

Property	Description	Values
Bar Height	The height of the barcode.	Decimal
Data Identifier	Data entered in this field will be encoded in the barcode but will not print in the human readable text field for the barcode. Data Identifiers are used to help the scanner identify the field. **For Example** For an AIAG label, a barcode with a data identifier of P contains a part number, a data identifier of Q signifies a quantity field and a data identifier of S signifies a serial number field.	
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating

Property	Description	Values
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-16 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	003.3 to 066.0 mil in set increments
Primary Field	HIBC Primary from which the link character is taken. **Note:** Primary Field is only available on HIBC Secondary (Code 39) symbology.	Field Name
Ratio	The ratio of the wide bar to the narrow bar. The ratio can be used to create 'in between' sizes between different X-dimensions. **For Example** For Ratio 3:1, the wide bars are three times the size of the narrow bars.	2.0:1 to 3.0:1 in .1 increments

Interleaved 2-of-5 Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The vertical span of the barcode.	Decimal
Bar Width Adjustment	Adjust the width of the bars to improve readability of a barcode in cases where ink spread or ink drying may affect readability. **Notes:** This property is only available when using the Generic Windows Driver.	-59 to 59 pixels depending on Line: Width setting
Bearer Bars	Bearer bars are used to reduce the chance that a non-fixed length symbol is incorrectly read.	None Top/Bottom Rectangle

Property	Description	Values
Check Digit	Add an optional check digit to the barcode. The listed check digits are optional forms of the selected symbology. Special purpose check digits can be added to the barcode using the Formula data source.	None Mod 10 Validate User Entered Mod 10
Data Identifier	Data entered in this field will be encoded in the barcode but will not print in the human readable text field for the barcode. Data Identifiers are used to help the scanner identify the field. **For Example** For an AIAG label, a barcode with a data identifier of P contains a part number, a data identifier of Q signifies a quantity field and a data identifier of S signifies a serial number field.	
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-50 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	003.3 to 161.7 mil in set increments
Ratio	The ratio of the wide bar to the narrow bar. The ratio can be used to create 'in between' sizes between different X-dimensions. **For Example** For Ratio 3:1, the wide bars are three times the size of the narrow bars.	2.0:1 2.5:1 3.0:1
Show Start/Stop	Specifies if the Start/Stop character is to be displayed in the human readable text for the barcode.	Yes/No

micro PDF417 Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Code 128 Emulation	The height of the barcode.	▪ None - No emulation ▪ C0 - Simple Code 128 emulation ▪ C1 - GS1-128 FN1 in 1st position ▪ C2 - GS1-128 FN1 in 2nd position ▪ C1 with 1D symbol ▪ GS1-128 C1 linked to 1D barcode
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ▪ Line: X-Dim ▪ Line %-Nominal	1-16 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ▪ Line: Width. ▪ Line:%-Nominal	003.3 to 066.0 mil in set increments
Micro PDF417 Size	The discreet size of the symbol expressed as columns x rows.	1-4 columns rows vary depending on columns used.
Row Height	The symbol's row height in printer pixels (dots).	dots

PDF 417 Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Columns	The number of columns in the symbol, each column is made up of 17 individual modules.	

Property	Description	Values
Compression Type	Selects data compression method and determines the number of codewords per character based on text, numeric and binary compaction methods..	Auto Numeric-Only Alpha-Only Alpha-Numeric
Data Identifier	Data entered in this field will be encoded in the barcode but will not print in the human readable text field for the barcode. Data Identifiers are used to help the scanner identify the field. **For Example** For an AIAG label, a barcode with a data identifier of P contains a part number, a data identifier of Q signifies a quantity field and a data identifier of S signifies a serial number field.	
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-50 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	003.3 to 165.0 mil in set increments
Row Height	The symbol's row height in printer pixels (dots).	dots [1]
Security Level	A higher number will increase the amount of destruction the symbol can withstand, while also increasing the size of the symbol.	0-8
Truncate	A truncated PDF symbol occupies less printed area than a standard symbol; however, there is a slight degradation in decode performance.	No/Yes

[1]For Datamax "class" models, the max value for Row Height is 61. You can enter a higher value, but the actual printed row height is limited to 61 pixels. Class models include: A-4212, A-4310, A-4408, A-4606, A-6212, A-6310, E-4203, E-4204, E-4304, H-4212X, H-4310X, I-4206, I-4208, I-4210, I-4212, I-4308, I-4406, I-4604, M-4206, M-4306, W-6208, W-6308, W-8306, DPL (Family Driver). For other Datamax models, the max value is 24. You can enter a higher value, but the actual printed row height is limited to 24 pixels. Other Datamax models include: Allegro, Allegro 2, Ovation, Ovation 2/3, PE4X, Prodigy, Prodigy 6.5, Prodigy Plus, Prodigy MAX, Prodigy MAX 300, ST-3210, ST-3306, Titan 6200, XL.

QR Code Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Note: The current Loftware implementation of QR Code does NOT support FNC1 modes.
The current Loftware implementation of QR Code does NOT support Extended Channel Interpretation (ECI) mode.

Property	Description	Values
Cell Width	The symbol's module (or cell) height in printer pixels (dots).	Pixels
Data Input Mode	The type of information encoded in the symbol. **Note:** Alpha characters must be in uppercase. To use lower case letters select Binary mode.	Auto Numeric Alpha Binary Kanji
Mask	This option is only used when QR Codes are printed natively to Toshiba TEC or Zebra printers.	0-7 None Auto Selection
Model	This option is only used when QR Codes are printed natively to Toshiba TEC or Zebra printers.	1 2
Error Correction	The level of error checking and correction employed in the symbol.	Level L - Approximately 7% error correction. Level M - Approximately 15% error correction. Level Q - Approximately 25% error correction. Level H - Approximately 30% error correction.
Symbol Size	The number of rows and columns in the symbol. **Note:** Specific Row and Column selections are not used when printed natively. Barcodes will always use Auto.	Auto 21-173 Rows and Columns

Print QR Codes Natively to Zebra Printers

Loftware Label Manager and the Loftware Print Server allow you to design and print QR Code symbols and print them as bitmaps to any of the barcode label printers that Loftware supports. Certain Zebra printers have the ability to print QR Codes natively. If you were printing QR Codes natively to Zebra printers before installing or upgrading to the Loftware Print Server or Label Manager version 10.0, you may notice a decrease in performance when printing labels with QR Codes. Switching QR Codes back to native mode for your Zebra printers should restore your previous performance.

Requirements

- Identify the printer models that will be used to print the QR Code symbols natively.

Identify the Printer IDs to Configure for Native QR Code Printing

1. Open the prslst32.lfw file in a text editor. The default location for this file is <Program Files Folder>\Loftware Labeling.
2. Locate the names of the printer models you identified in the **Requirements** section.

For Example

Find the entries for the Zebra 130 and 140

```
"Loftware Zebra 130",3040,"ZEBRA32.DLL",1,9600,8,2,1,0,6
"Loftware Zebra 140",3041,"ZEBRA32.DLL",1,9600,8,2,1,0,6
"Loftware Zebra 140xi",3042,"ZEBRA32.DLL",1,9600,8,2,1,0,6
"Loftware Zebra 140xiII",3074,"ZEBRA32.DLL",1,9600,8,2,1,0,6
"Loftware Zebra 160S",3057,"ZEBRA32.DLL",1,9600,8,2,1,0,6
"Loftware Zebra 170xi",3043,"ZEBRA32.DLL",1,9600,8,2,1,0,6
```

3. Note the 4-digit numbers after the printer model. This is the Loftware Printer ID.

```
"Loftware Zebra 130",3040,"ZEBRA32.DLL",1,9600,8,2,1,0,6
"Loftware Zebra 140",3041,"ZEBRA32.DLL",1,9600,8,2,1,0,6
```

Enable Native QR Code Printing in LLMWDN32.ini

1. Select Start | All Programs | Loftware Labeling | System Folders | Configuration, and create a backup copy of the LLMWDN32 configuration file.
2. Open the LLMWDN32 configuration file in a text editor
3. Add the `[NativeOverride]` setting to the file on a new line.
4. Under the `[NativeOverride]` setting, add `QRCode=` and the Loftware Printer IDs that you identified.

For Example

```
[NativeOverride]
QRCode=3040,3041
```

Note: It is not necessary to add Windows printers to the INI file.

Note: The NativeOverride setting will apply to all printers of the model that you add to the INI file.

If the Loftware Print Server is Configured to use Windows Registry Settings

If your Loftware Print Server is configured to use settings in the windows registry you must perform the following additional steps to enable `[NativeOverride]` of QR Code printing to certain Zebra printers.

1. Select Start | All Programs | Loftware Labeling | Print Server | LPS Configuration. The Loftware Print Server Configuration Utility opens.
2. Press Shift | F2. The **Advanced** tab appears. Select the **Advanced** tab.
3. Clear the **Remap Ini Files to Registry** checkbox, and click **OK**.
4. Add the [NativeOverride] setting to the LLMWDN32 configuration file as described in Enable Native QR Code Printing in LLMWDN32.ini.
5. Repeat steps 1 and 2, and then reselect the **Remap Ini Files to Registry** checkbox. Click **OK**.

Building QR Code Barcodes

QR Code is a high capacity, two-dimensional square matrix symbology that is made up of a pattern of dark and light square modules, packing information in two directions. It supports encoding modes for numeric, alphanumeric, 8-bit byte, and Kanji data. Depending on the data encoding mode, a QR Code symbol can include up to 6743 characters.

There are 39 QR Code symbol versions ranging from 21 x 21 (Version 1) to 173 x 173 (Version 39) modules per side. Each higher version increases by 4 modules per side.

In LLM, you can use a Keyboard or a Formula data source for the QR Code data. You can pass the data using a .pas, a .csv. or an .xml file.

1. For the barcode symbology, select QR Code.
2. Default **Cell Width** depends on the printer dpi capability. The options are 1 to 52 pixels.
3. Select a **Data Input Mode**:
   - Auto - With Automatic data input, data with any character greater than character value 126 is assumed to be Kanji data and automatically converted to Shift JIS before it is sent to the printer.
   - Manual mode - With one of the Manual data input options selected, you can control character mode switching (**Numeric, Alphanumeric, Binary, Kanji**). You can use a formula with the necessary ZPL data commands embedded. Kanji data must be passed as Shift JIS. For information on ZPL programming, refer to the *Zebra ZPL II Programming Guide*.
4. Select an **Error Correction** level. Error Correction is used to restore data and improve reading if the code is partially damaged. There are four levels of Error Correction.
5. Select a **Mask** pattern. This is used to balance the light and dark modules and minimize patterns that may interfere with processing. Auto Selection applies the most appropriate masking pattern.
6. Select a **Model** number. Model refers to the QR Code specification. Model 1 is the original

specification.

7. Select a **Symbol Size**.

Related Information
QR Code is established as an ISO (ISO/IEC18004) standard and defined in the document *ISO/IEC 18004: Automatic identification and data capture techniques — Barcode symbology — QR Code*. This is available from the ISO Web site.
Refer to AIM International Symbology Specification 97-001 for more information. Model 2 is the enhanced QR Code symbology.
Refer to the ISO/IEC FCD 18004 specification for more information.

GS1 DataBar and GS1 DataBar Composite Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The vertical span of the barcode.	
Bar Height Ratio	The ratio of the barcode height compared to the narrow line width. This property can not be explicitly set, it is calculated from the bar height and line width properties and displayed for informational purposes. For the stacked GS1 DataBar types, the ratio is fixed and cannot be changed.	Recommended ratios for each of the GS1 DataBar Types: ■ GS1 DataBar Omnidirectional 33x ■ GS1 DataBar Truncated 13x ■ GS1 DataBar Limited 10x ■ GS1 DataBar Stacked 13x ■ GS1 DataBar Stacked Omnidirectional 69x
GS1 DataBar Type	GS1 DataBar symbologies consist of several variations, this property specifies which one is used for this field.	GS1 Databar Omnidirectional GS1 Databar Truncated GS1 Databar Limited GS1 Databar Stacked GS1 Databar Stacked Omnidirectional

Property	Description	Values
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-50 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	1.7 - 102 Mil

TLC39 Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Code 39 Bar Height	The height of the Code 39 portion of the TLC39 symbol.	Decimal
Code 39 Ratio	The ratio of the wide bar to the narrow bar in the Code 39 portion of the TLC39 symbol.	2.0:1 2.5:1 3.0:1
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-10 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	3.3 - 33 mil
Micro PDF417 Bar Height	The row height in printer pixels (dots) of the micro PDF417 portion of the TLC39 symbol.	

Property	Description	Values
Micro PDF417 Size	The discreet size of the symbol expressed as columns x rows	4 columns 4-44 rows

Building TLC39 Barcodes

TLC39 is a composite symbology designed for the Telecommunications Industry. TLC39 combines a Code 39 symbol, encoding a part number (for items such as plug-in boards at central switching stations) with a linked MicroPDF417 symbol encoding a serial number and other optional information.

The first 6 characters must be numeric and include the ECI number. The 7th character is a delimiter between the linear data portion and the composite data portion, typically a comma, but other delimiters are allowed. The next piece of data is a mandatory unique Serial Number.

There can be other data fields after the Serial Number, usually either AppIDs or DataIDs, which are governed by whether or not there are alpha characters in the serial number. Country Of Origin is another typical data field that is included in this symbology.

Loftware supports the native printing of this symbology to both Zebra and Datamax; however, this ability is firmware dependent. Contact Zebra or Datamax to find out more information. Loftware is able to print this symbology as a bitmap to all of our supported printers.

GS1 Generic Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The vertical span of the barcode.	Decimal
Data Identifier	Data entered in this field will be encoded in the barcode but will not print in the human readable text field for the barcode. Data Identifiers are used to help the scanner identify the field. **For Example** For an AIAG label, a barcode with a data identifier of P contains a part number, a data identifier of Q signifies a quantity field and a data identifier of S signifies a serial number field.	

Property	Description	Values
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-16 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	003.3 to 165.0 mil in set increments

GS1 SSCC Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The vertical span of the barcode.	Decimal
Data Identifier	Data entered in this field will be encoded in the barcode but will not print in the human readable text field for the barcode. Data Identifiers are used to help the scanner identify the field. **For Example** For an AIAG label, a barcode with a data identifier of P contains a part number, a data identifier of Q signifies a quantity field and a data identifier of S signifies a serial number field.	
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating

Property	Description	Values
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-16 Pixels
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ■ Line: Width. ■ Line:%-Nominal	003.3 to 165.0 mil in set increments

UPC-A and UPC-E 6 digit Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Bar Height	The vertical span of the barcode.	Decimal
Extension	Specify whether a 2 or 5 digit extension is to be used. UPC extensions are used to extend the range of available part numbers that can be encoded.	None +2 +5
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating
Line: Width	The barcode's module (or narrow bar) width in printer pixels (dots). This property is related to: ■ Line: X-Dim ■ Line %-Nominal	1-16 Pixels
Line: % Nominal	The barcode's module width as a percent of nominal tolerance. UPC/EAN barcodes have a nominal module width of .0013". This property is related to: ■ Line: X-Dim ■ Line:Width	25-1269%

Property	Description	Values
Line: X-Dim	The barcode's module (or narrow bar) width in thousandths of an inch. This property is related to: ▪ Line: Width. ▪ Line:%-Nominal	003.3 to 066.0 mil in set increments

UPS MaxiCode Properties

Note: Not all of the properties described in the table will be available to all printers.

Note: Value ranges may be printer dependent.

Property	Description	Values
Current Symbol	When used with the structured append format, the position of the symbol in a set.	0-8
Human Readable	Specifies if a text representation of the barcode is to print. For most barcode types, the human readable text can be positioned anywhere on the label (free floating). Some barcode types require the human readable text to be in a fixed position.	None Free Floating
Mode	Modes 0 and 1 are part of the original MaxiCode specification and are now considered obsolete. Mode 2 is used for Domestic U.S. destinations. Mode 3 is used for non U.S. destinations. Mode 4 is free form data entry. Mode 5, if supported by the printer, is used for free form data entry with Full Enhanced Error Correction. Mode 6 is used for reader programming only.	0 1 2 3 4 5 6
Total Symbols	When used with the structured append format, the total number of the symbols in a set.	0-8
UPS Compression	Version 1 - Implements an ANSI-compliant UPS MaxiCode format for compressing data and increasing data storage. None - No compression is performed on the data. The format of the data is governed by original MaxiCode specifications and the requirements of the printer command language.	None Version 1

Building MaxiCode Symbols

As companies across the world strive to improve productivity, efficient management of goods and materials is becoming increasingly important to the manufacturing and distribution sectors. That is why MaxiCode was developed. MaxiCode provides a way to store a lot of information in a small space.

MaxiCode is a two-dimensional symbology that can encode about 100 characters of data in a one square inch. Within this small space are two MaxiCode components; black and white hexagons that pack information in two directions, and a target-like central pattern that allows the symbol to be easily located at high speeds. A MaxiCode symbol is displayed in the template below.

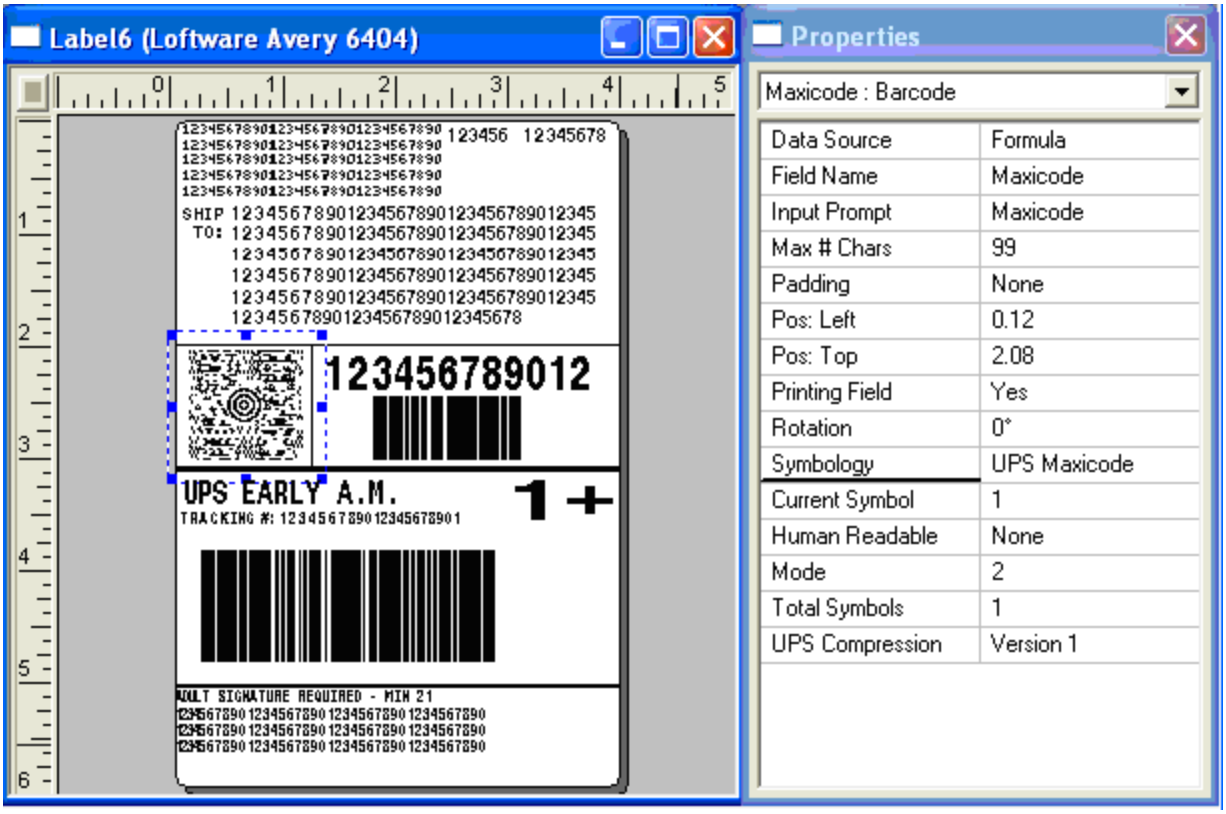


Figure 13.1: UPS MaxiCode Template

MaxiCode has been recommended by the American National Standards Institute (ANSI) as the two-dimensional symbol most appropriate for the sortation and tracking of unit loads and transport packages. MaxiCode has high information density and can be read at high speeds in a large field of view. MaxiCode can be decoded in any orientation and offers the security of high data integrity even if the symbol is damaged. Because of their small size, MaxiCodes are easily incorporated into label designs. In fact, many printer manufacturers have the capability to print MaxiCodes on labels. MaxiCode is the best symbology to use any time a large field of view is required, a label is moving, the label orientation is random, or if label space is limited.

MaxiCode is supported in all Loftware printer families, including Windows printers. The templates are included in the Loftware product and are available for download from the Loftware Web site.

Note: A sample label named MaxiCodeCompressionTest.lwl has been added to the ..\labels\samples\maxicode directory in Loftware. The label has 2 maxicode symbols, each with compression properties turned on and a clear value set. One of the symbols is not compressed; the other is compressed. It may be used as a troubleshooting tool to test compression.

To open a UPS MaxiCode template

1. Open Loftware Label Manager in Design Mode.
2. Select File | New from the menu bar.
3. Select **New Label**, and then **Compliance Template** in the New Label Wizard.
4. Select the **Target Device**, **Manufacturer**, and **Model**.
5. Select the UPS Template you wish to use from the list. The template you choose contains the MaxiCode Symbol.
6. Click **Next** and **Finish**.

Related Information
For more information on Templates, refer to the Templates and Wizards section of this guide.

MaxiCode Compression

Compression is a means to allow more data to be included in the MaxiCode symbol. The following fields are present in a non-compressed UPS MaxiCode symbol:

Ship To Postal Code	Shipment ID
Ship To ISO Country Code	Shipment N of X
Class of Service	Weight
Tracking Number	Address Validation
Origin Carrier SCAC	Ship To Address
Shipper ID	Ship To City
Julian Date of Pickup	Ship To State

A compressed UPS MaxiCode symbol also contains the following fields:

- Ship To Address Line 2
- Ship To Address Line 3
- Ship To Address Line 4
- Ship To Address Line 5

On-Demand Printing

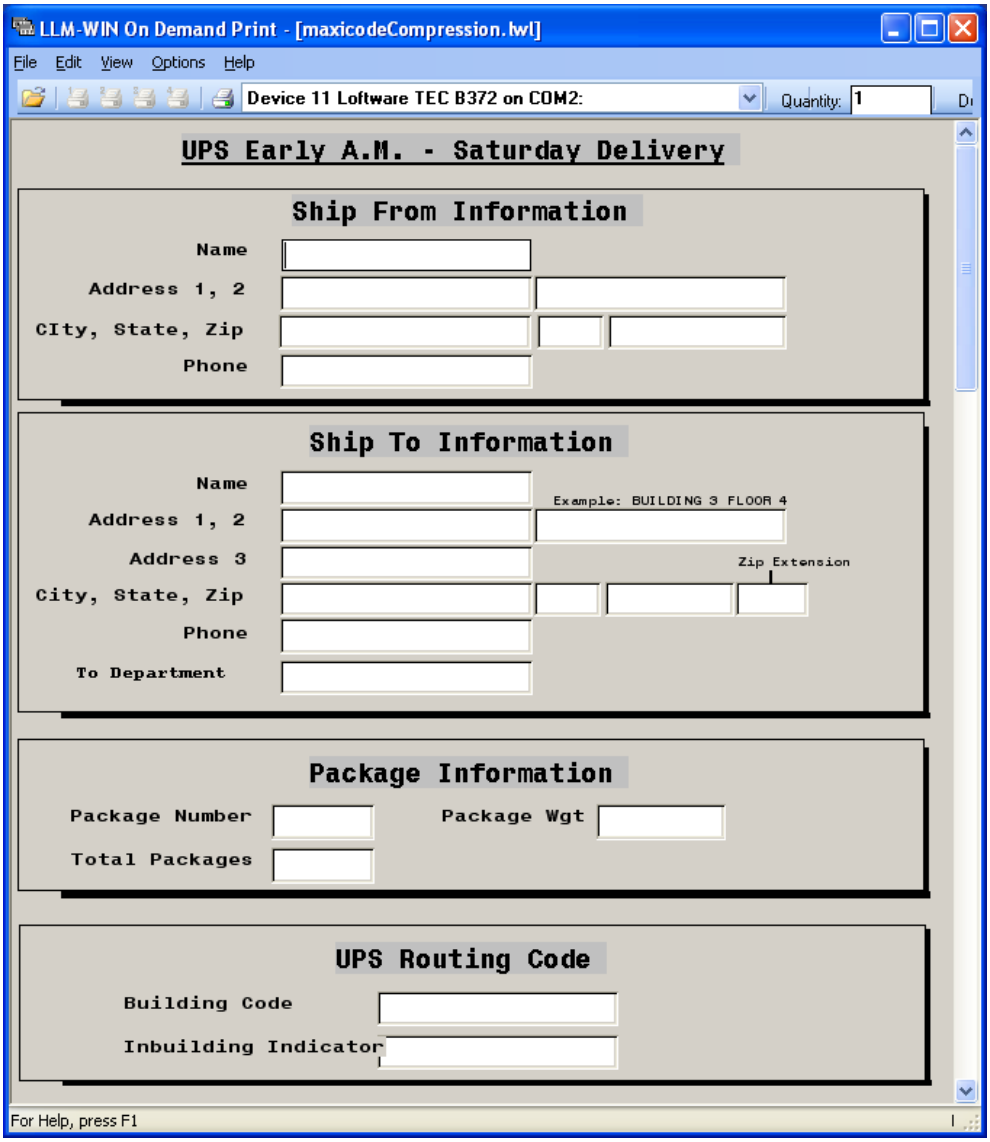


Figure 13.2: MaxiCode Template On-Demand Print Screen

Using MaxiCode Compression

Loftware has included templates for each label in the *Label Examples by Service* section of the *UPS GUIDE TO LABELING* document, February 2001 Edition. Contact UPS for this document. The MaxiCode formulas on each of these templates are constructed to conform to the UPS Compression Tool requirements. The easiest way to implement MaxiCode compression is to use the template that matches your specific labeling requirement. Information on how Loftware implements the UPS Compression Tool follows.

UPS Compression is found in the MaxiCode Properties box. Note that the options in the drop-down list are either **None** or **Version 1**. If you select None, then no compression takes place. This is the default setting. If the MaxiCode Template is used, the default is **Version1**. If you select **Version 1**, then Loftware runs the compression tool if possible. Loftware calls the UPS Compression Tool Version 1 as this tool may be revised by UPS at a future date.

MaxiCode Data Format

Another advantage to using the Version 1 setting is that the same data structure is utilized for all printers; therefore the same formula works for all the different printer families that Loftware supports. Use one formula and Loftware takes care of the rest. Loftware's UPS templates are designed using a formula datasource for the MaxiCode symbol. The formula is constructed so that you can supply your data as separate, individual fields, using any of the Loftware label printing methods (For example, ODP, ActiveX). The formula then formats the data into the correct ANSI compliant string (ACS). (More on the ANSI compliant string follows.) Alternatively, if you are using the LPS, you can change the data source to "Keyboard" and supply the entire ACS via a PAS, CSV, etc. It is NOT possible to print a MaxiCode Mode 2 or Mode 3 symbol correctly in On-Demand Print using the Keyboard Data Source, as the non-printable ASCII characters such as GS, RS and EOT cannot be added in the input screen.

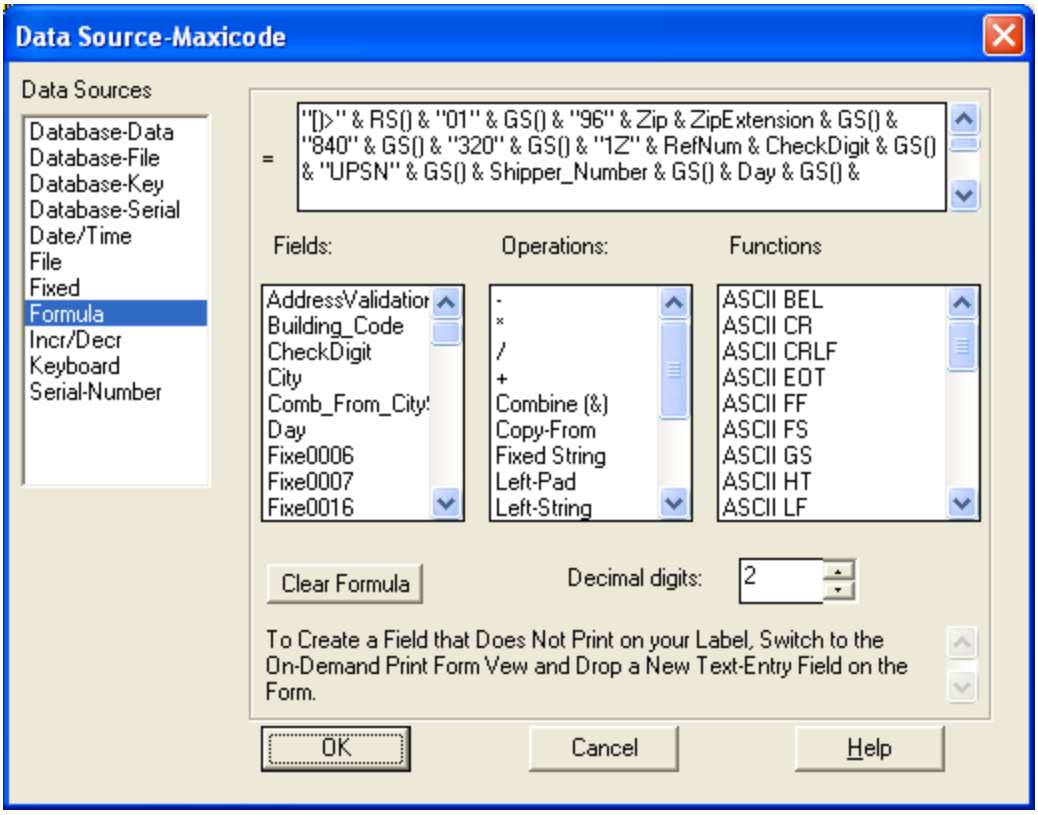


Figure 13.3: MaxiCode Formula

MaxiCode .PAS File Format

```
From_Name,SHIPPERS INTERNATIONAL
From_Address1,5TH FLOOR
From_Address2,1550 W AWHERE STREET
From_City,PHOENIX
From_State,AZ
From_Zip,85027-1550
From_PhoneNo,(321)456-7890
To_Name,JOSEPH COHEN
To_Company,MOTOR CITY CORP
To_Address2,ROOM 202
To_Address1,813 KREMENETSKI ST
Department,ENGINEERING DEPT
City,SHAMBALA
State,CA
Zip,98760
ZipExtension,1211
To_Phone,(987) 654-3210
PkgNum,1
Total_Packages,3
Weight,140
Building_Code,8419
Inbuilding_Indicator,06
ServiceTitle,UPS GROUND
ServiceIcon,GND
Shipper_Number,123456
Class,001
RefNum,1234567
CheckDigit,5
Shipment_ID,8897
Day,123
Country,840
SCAC,UPSN
Addlinfo1,ANSI COMPLIANT STRING
AddlInfo2,BUILT BY FORMULA
```

*PRINTLABELModes - Modes are set in the Properties box. The compression option should only be used for Mode 2 (domestic shipping) and Mode 3 (international shipping). If you have chosen Mode 3 in the Properties box, the data is not compressed; however, it is formatted for the specific printer family . With Mode 2, the data is both compressed and formatted, and then sent to the printer.

The following conditions apply when MaxiCode Compression is set to Version 1.

The Symbol prints with compressed data if:

- Data is supplied in the correct ANSI Compliant String (ACS) format, and it is a Mode 2 symbol.

The Symbol prints with uncompressed data if:

- It is a Mode 3 Symbol
- It is a Mode 2 Symbol and the UPS Compression Tool fails to compress the data.

The Symbol prints with incorrect data if:

- The Symbol is not Mode 2 or 3, and the data supplied is not in the correct format for the printer
- The first 9 characters of the data do not match the header ([)>Rs01Gs96) in the formula and the data supplied is not in the correct format for the printer.

The Symbol does not print if:

- Any of the fields that cannot be truncated have too much data.
- The Symbol is Mode 2 and the data could not be compressed and; either the Postal Code has non-numeric characters, or is not a valid length (5 or 9 characters).
- The data is not compressed (either because the UPS Compression Tool fails to compress the data, or it is not a Mode 2 Symbol) and the data length is greater than the allowable character amount (99 for Mode 2, 96 for Mode 3).

Note: In general, the UPS Compression Tool fails to compress the supplied data if one of the fields contains invalid data. For instance, an alpha character in the Postal Code field (Mode 2) or 3 characters in the State field.

ANSI-Compliant String

The following table shows the fields for the MaxiCode symbol and the maximum allowable size for each field.

Note: Fields marked with an * are NOT allowed to be truncated.

KEY:N=Numeric only (ex: 9N means 9 numeric characters)
AN=Alphanumeric (ex: 6AN means 6 alpha-numeric characters)

Field Name	Max Size (Bytes) & Type	Comment
Ship To Postal Code *	Mode 2, 9N Mode 3, 6AN	This field should be populated as left justified.
Ship To ISO Country Code *	3N	
Class of Service *	3N	
Tracking Number *	10AN	
Origin Carrier SCAC * UPSN	4	
Shipper ID *	6AN	
Julian Date of Pickup *	N3	Indicates the date the package was labeled. This field contains the numerical day of the year (0-999).
Shipment ID *	AN0...30	Contains a number that identifies a shipment. This field is optional.

Field Name	Max Size (Bytes) & Type	Comment
Shipment N of X *	N0..3/N0..3	Contains package "n" of "x" total packages in a shipment.
Weight *	N0…10	Contains the gravitational weight of the package (lb.)
Address Validation (Y/N)*	1	Set to Y if Content of Postal Code, City, and State have been validated using CASS*-certified software).
Ship To Address	AN0..35	Ship To Address, Line 1, Suggested: Primary Address. This is typically the Street Address.
Ship To City *	AN0…35	
Ship To State *	A2	
Ship To Address Line 2 Application Identifier (20L)	AN3+AN0…35	Suggested: Secondary Address (1). This is typically the Room/Floor or Urbanization.
Ship To Address Line 3 Application Identifier (21L)	AN3+AN0…35	Suggested: Secondary Address (2). This is typically the Department.
Ship To Address Line 4 Application Identifier (22L)	AN3+AN0…35	Suggested: Consignee (1), typically the Company Name. (This is typically the portion of an address that is tied to an address book mechanism)
Ship To Address Line 5 Application Identifier (23L)	AN3+AN0…35	Suggested: Consignee (2), typically the Attn: field content.

*CASS - Coding Accuracy Support System certification by the United States Postal Service

USPS Intelligent Mail®-

USPS Intelligent Mail is a 4-state barcode that consists of 65 bars that can encode up to 31 digits. Including:

- Barcode Identifier
- Service Type Identifier
- Mailer Identifier
- Serial Number
- Deliver Point ZIP Code

See the USPS *Intelligent mail Barcode (4-State Customer Barcode)* specification for complete information on encoding USPS Intelligent Mail barcodes:

https://ribbs.usps.gov/intelligentmail_mailpieces/documents/tech_guides/SPUSPSG.pdf

Property	Description	Values
Symbol Size	Changes the relative height and width of all the bars in the symbol.	Small Medium Large

This section describes Loftware-supported standard barcode and RFID printers. It also includes block and tag configuration information on the RFID HF and UHF tags available for supported RFID devices.

Printer Family	Supported Options	Family Driver Supported
Avery	Avery Options	ZPLII, EPL2
C.Itoh	Datamax Options	
Citizen	Datamax Options, Zebra Options	ZPLII
Datamax	Datamax Options	DPL, ZPLII (PL-Z), EPL2 (PL-E), IPL (PL-I)
Eltron	Eltron Options	EPL2, ZPLII
EXE	SATO Options	
Fastmark	Datamax Options, Eltron Options	
Fox IV	SATO Options, Datamax Options, Zebra Options, Intermec Options, Printronix Options	ZPLII (ZSim), IPL, Direct Protocol
InfoPrint Solutions	Printronix Options	ZPLII (ZGL), IPL (IGL)
Imtec	Zebra Options, Intermec Options	
Intermec	Intermec Options, Intermec and UBI Options	ZPLII (ZSim), EPL2 (ESim), IPL, Direct Protocol
Meto	Datamax Options	
Novexx	Novexx Options	
Paxar/Monarch	Paxar MPCL1 Options, Paxar MPCL2 Options	ZPLII, EPL2
PCL5	PCL5 Options	
Pressiza	Datamax Options, Avery Options	
Printronix	Printronix Options	ZPLII (ZGL), IPL (IGL)
QuickLabel	Datamax Options	
SATO	SATO Options	ZPLII (ZGL), IPL (IGL)
Toshiba-TEC	TEC Options	
UBI	Intermec and UBI Options	Direct Protocol

Printer Family	Supported Options	Family Driver Supported
Windows	Windows Printer Options	
Zebra	Zebra Options	ZPLII, EPL2, IPL

Label Printers and RFID Printers

Unless otherwise noted, the Loftware-supported RFID printers described in this section are UHF printers. These are printers that support encoding to UHF tag types.

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Avery Dennison Printers

This section provides information specific to the Avery Dennison family of printers.

Avery Dennison also owns the Paxar and Monarch brands of printers. Refer to the following sections for information on these printers.

- Paxar (Monarch) MPCL1 Printers
- Paxar (Monarch) MPCL2 Printers

Supported Printer Models

Loftware supports the following Avery printer models.

Barcode Label Printers						Datamax Language
64-04	ALX 924	TTK	AP 4.4	DPM 4	TDI	S-262
64-04 ALT	ALX 925	TTK ALT	AP 5.4	DPM 5	TDI ALT	S-362
64-05	ALX 926	TTX 1050	AP 5.4 ALT	DPM 6		S-462
64-05 ALT		TTX 1050 ALT	AP 7.t textile			
64-06		TTX 300 OFL				

Barcode Label Printers						Datamax Language
64-06 ALT		TTX 300 OFL-ALT				
64-08		TTX 300 ONL-ALT				
64-08 ALT		TTX 350				
		TTX 350 ALT				
		TTX 450				
		TTX 450 ALT				
		TTX 650				
		TTX 650 ALT				
		TTX 674				
		TTX 674 ALT				
		TTX 675				
		TTX 675 ALT				
		TTX 950				
		TTX 950 ALT				

Loftware supports the following RFID printer models.

RFID Tag Printers		
64-04 RFID	ALX 924 RFID	DPM 4 RFID
64-05 RFID	ALX 925 RFID	DPM 5 RFID
64-06 RFID	ALX 926 RFID	DPM 6 RFID
64-08 RFID		

Supported Printer Family Drivers

Certain Avery Dennison printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Avery Dennison printers.

- ZPLII
- EPL

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.
Refer to the RFID Devices and Tag Types section for information on tag types supported by the Avery Denison RFID printers.

Avery Dennison Interface Cables (Parallel, Serial, and USB)

These printers usually have a serial interface and a parallel interface. Some models support USB and have NIC Ports.

Interface	Description
Parallel Interface (standard interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Check with manufacturer for cable information. The hardware license key is not part of the serial interface since it must always be plugged into an LPT parallel port.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.
Network Port	Included or optional on some printers.

Avery Dennison Options

Avery Dennison Options may be label-specific or printer-specific.

Avery Dennison Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Label Options Section	
Print Speed	The range of available print speed varies with the selected printer type. This setting controls the speed at which the stock moves during printing. The combinations of print speed and head temperature control the print quality of the label.
Feed Speed	This setting affects the speed at which the paper is fed when advancing over non-printing areas. This setting may affect printer throughput.
Head Temp	This allows you to control the darkness of the print.
Job End Flag Label	When this option is set, the last label printed in a batch is longer than the previous labels, signifying that it is the last label of the batch.

Label Options Section	
Label Inverse	Inverts the entire label, black prints as white, white space prints as black.

Printer Overrides Section	
These settings override the Print Options Section in Printer Specific Options.	
Print Mode	■ Batch Mode - The whole surface of the label is printable. ■ Normal 1:1 Mode - The first 18 mm of the label is not printable. The printing on the label is automatically shifted past the empty space. ■ Real 1:1 Mode - Total surface of the label is printable, and the label is retracted after each label.
Character Set	Several printer languages are available that can print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character
Gap Offset	This command is for determining the beginning of the label when labels are printed with irregular gaps.
Cut Interval	This sets the number of labels to be printed before the stock is cut.
Dispense Position	This adjusts the distance the label is fed after printing.

Avery RFID Options Section	
These options apply to Avery RFID printers.	
Use Label or Printer Options	This setting determines whether to use the options set in this section or those set in the Avery RFID Printer Specific Options. From this dialog, label setup options can be set when the Use Label RFID Options setting is selected.
RFID Tag Type	Select one of the supported tag types: Autodetect, EPC Class 0, Alien EPC Class 1, and Philips UCODE EPC 1.19 tags.

Note: If you are using an Avery RFID printer to print your label, from the Avery RFID PSO dialog, set RFID Tag Type to Autodetect which automatically determines the tag type. Otherwise, you must set the tag type from the Avery PSO dialog to match what is set in the Block Configuration dialog.

Tag Position From Start of Label	This is the distance of the chip from the leading edge. This defaults to 60 mm.
Number of Write Retries per Label	This setting determines the number of times to retry in case of initial failure.
Number of Labels to Retry in Case of Tag Access Failure	This setting determines the number of retries before displaying an error message and requiring user intervention.
Verify	This is set to Off, by default. When Verify is enabled, it detects whether the tag about to be written to is an Alien tag or not.

Avery Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

Media Options Section	
Stock Type	▪ Die Cut - Stock that has gaps between each label. ▪ Continuous - No gaps, notches, or perforations between labels.
Media Type	▪ Thermal Transfer (Ribbon) - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath, heating the ribbon material and melting it onto the label. To increase the quality of the print, decrease or increase the speed and/or the heat as necessary. ▪ Direct Thermal (No Ribbon) - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print, decrease/increase the speed and/or heat as necessary. ▪ Ribbon Autoecon On/Off - This command turns on the ribbon saver "auto economy" feature in supported printers. Printers that do not support this feature ignore the command. When this feature is turned on, the ribbon usage is economized by lifting when the minimum amount of white space is exceeded.
Gap Offset	This command determines the beginning of the label when printing labels with irregular gaps.
Gap Length	For continuous stock, this setting is used to add space between printed labels. The settings are in increments of 1 mm.
Cut Interval	This sets the number of labels to be printed before the stock is cut. This setting may yield poor results if you use a value that is not an even multiple of the Quantity and/or Duplicates value. For example: If Quantity = 2, Duplicates = 3, and Cut Interval = 2, your labels may print/cut in the following sequence: Label 1 Duplicate 1 Label 1 Duplicate 2 <CUT> Label 1 Duplicate 3 Label 2 Duplicate 1 <CUT> Label 2 Duplicate 2 Label 2 Duplicate 3 <CUT>

Media Options Section	
Get Printer Status	This returns a message providing status on the printer. If there is a problem communicating with the printer, a corresponding error message is displayed. This option is only supported by certain printers.

Print Options Section	
Do Not Send Options	When this is checked, Loftware does not send any Printer Specific Options or Label Specific Options to the printer.
Print Mode	The availability of the Print Modes depends on the printer. ■ Batch Mode - The whole surface of the label is printable. ■ Normal 1:1 Mode - The first 18 mm of the label are not printable. The printing on the label is automatically shifted past the empty space. ■ Real 1:1 Mode - Total surface of the label is printable, and the label is retracted after each label.
Character Set	Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Dispense Options Section	
Dispense Mode	This is only for printers with the dispenser attachment. ■ Batch Mode - The entire label is not printable; the label is not retracted after feeding to the Dispense position. ■ 1:1 Mode - The entire label is printable since the label is retracted before printing the next label.
Dispense Position	Adjusts the distance the label is fed after printing.
Use Single Start function	Only one label is printed at a time. Printing is then suspended until the correct action has been taken. The required action depends on the settings of the printer, and is either the removal of the presented label or the use of a foot pedal.

Graphics Options Section	
Store Images	This setting overrides the normal image behavior and always stores all images.
Images as Binary	All images are sent to the printer in binary format.

Custom Command Section	
The Custom Command option is used when a non-typical printing function is required. Refer to the printer's programming manual for commands that may be used.	
Send to Printer	This button is used to send a command to the printer immediately.
Command Location	This selection determines at which point in the print stream that the custom command will be inserted. ■ After #!A1 ■ After #ER ■ After #Q ■ Before #ER ■ Before #Q ■ Do Not Send

Related Information
Commands are printer model and firmware specific. Contact the appropriate printer representative for programming language questions.

C.Itoh Printers

This section provides information specific to the C.Itoh family of printers.

Supported Printer Models

Loftware supports the following C.Itoh printer models.

Barcode Label Printers		
C4	S4	T4
C4 TT	S4 Plus	T4 300dpi
	S4 400dpi	

These C.Itoh printers use the same language as Datamax-O'Neil Printers. Please refer to the Datamax-O'Neil Printers section for error messages and other information.

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Citizen Systems Printers

This section provides information specific to the Citizen Systems family of printers.

Supported Printer Models

Loftware supports the following Citizen printer models.

Datamax or Zebra Language	Datamax			
CLP 1001	CLP 2001	CLP 4081	CLP 6001	CLP 7001
		CLP 4121	CLP 6002	CLP 7002
			CLP 6401	CLP 7201E
				CLP 7202E
				CLP 7401

Citizen Systems printers use the same language as Datamax printers. The CLP 1001 can also use the same language as Zebra printers. See the appropriate printer section for options, error messages, and other information regarding Citizen printers.

Supported Printer Family Drivers

Certain Citizen printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Citizen printers.

- ZPLII

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Datamax-O'Neil Printers

This section provides information specific to the Datamax-O'Neil family of printers.

Supported Printer Models

Loftware supports the following Datamax printer models.

Barcode Label Printers								
400	Allegro	A-4212	E-4203	H-4212X	I-4206	M-4206	Ovation	ST-3210
430	Allegro 2	A-4310	E-4204	H-4310X	I-4208	M-4208	Ovation 2/3	ST-3306

Barcode Label Printers								
600		A-4408	E-4304		I-4210	M-4306	PE4X	Titan 6200
800		A-4606			I-4212		Prodigy	W-6208
		A-6212			I-4308		Prodigy 6.5	W-6308
		A-6310			I-4406		Prodigy Max	W-8306
					I-4604		Prodigy Max 300	XL
							Prodigy+	

Loftware supports the following RFID printer models.

RFID Tag Printers		
A-4212 RFID	H-4212X RFID	I-4210 RFID
A-4310 RFID	H-4310X RFID	I-4212 RFID
A-4408 RFID		I-4308 RFID
A-4606 RFID		I-4406 RFID
A-6212 RFID		I-4604 RFID
A-6310 RFID		

Refer to the RFID Devices and Tag Types section for information on tag types supported by the Datamax RFID printers.

Supported Printer Family Drivers

Certain Datamax printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Datamax printers.

- ZPLII (PL-Z)
- EPL2 (PL-E)
- IPL (PL-I)

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Interface Cables (Parallel, Serial, and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Supported Features

Feature	Description
Image Support	Images are downloaded and stored in the printer's image memory. Loftware Label Manager remembers images that are sent to the printer and only resends an image if the image is changed.
Supported Fonts	Datamax printers support a variety of native fonts and certain printers support TrueType fonts as well. Consult your printer manual for the specific native and TrueType font information.
Printer Control and Configuration	The Loftware Label Manager Design application allows you to configure printer settings that are saved in the label format using File | Media Setup.

Individual workstation printer settings may be configured using File | Devices from within the Design or any of the Print applications: On Demand, Range.

Many of the settings in the printer do not take effect until the printer is re-booted. In the device Options dialog box, pushing the Send To Printer button sends the currently selected options to the printer. All Label-Specific options are sent to the printer every time a label is printed.

Datamax Options

Datamax options may be label-specific or printer-specific.

Datamax Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Label Options Section	
Print Speed	The range of available print speed varies with the selected printer type. This setting controls the speed at which the stock moves when printing. The combinations of print speed and head temperature control the print quality of the label.
Slew Rate	This setting affects the speed at which the paper is fed when advancing over non-printing areas. This setting may affect printer throughput.
Backup Speed	This controls the rate of label movement during backup positioning for start of print, cutting, or present distance.
Head Temperature	This allows you to control the darkness of the print. 10 is nominal; setting the temperature higher than 10 causes the label to print darker. Temperature settings lower than 10 cause the label to print lighter.

Label Overrides Section
This section contains options used for Cutters, Label Presentation, and Symbol Sets.

Advanced Options Section	
Symbol Set	The Symbol Set option selects the scaleable font's symbol set. Consult the appendix section of your printer manual for a description of the character set.
Double-byte Symbol Set	This option allows you to choose a variety of Double-byte symbol sets, if your printer has the capability.
Clear Memory Module	When checked, the memory module is cleared each time a label format is sent. If unchecked, the memory module is not cleared before each label format is sent, thus potentially saving time. This option should only be used if enough memory is present to allow the module to remain uncleared when a format is sent.
Override Printer Setup	When checked, this allows you to override the Clear Memory setting in the PSO. This may be useful if you have a label that uses a lot of memory, and clearing the memory module is important.

WARNING! Printing Blank Labels? If you are printing labels in thermal transfer mode, and blank labels are advancing out of the printer, try increasing the head temperature in Label Options (F5) and test print your label again. This symptom may occur if the ribbon being used requires hotter head temperatures to transfer the ink from the ribbon onto the paper substrate.

Datamax Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking on **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

Label Options Section	
Supply Type	▪ Die Cut - Stock that has gaps between each label. ▪ Continuous - No gaps, notches, or perforations between labels. ▪ Mark Stock - Black mark found opposite print side.
Buffer Mode	▪ Double - Selecting the double buffer mode instructs the printer to erase and format only incremental fields that have changed. ▪ Single - Selecting single buffer mode instructs the printer to erase and format both incremental fields and the rest of the label format. This feature is only active when the labels being printed are less than half the maximum size of the printer's print buffer.
Ribbon Saver	This command turns the ribbon saver feature on in supported printers. The command is ignored by printers that do not support this feature. When the ribbon saver feature is turned on, the ribbon saver automatically lifts when the minimum amount of white space is exceeded.

Forms Control Section	
Note: Settings for Tear Off, Form Edge, and Label Gap are in dots. Use the dots per inch (dpi) for your printer to find the proper value. Datamax settings increment each 1/100 of an inch.	
Present Distance	This specifies an additional amount to advance the label after printing.
Tear Off (Label Retract)	The Tear Off control enables the label retract feature of the printer. The printer advances the label "tear off" dots after the label is printed so the label can be torn off. It automatically retracts the label back to the proper start position before printing the next label. The length should be set longer than the form edge.
Form Edge (Top of Form)	The Form Edge control determines where printing begins on your label. If you want the printer to print nearer to the leading edge of the label, decrease the form edge offset. If you want to move the start of print position away from the leading edge of the label (into the body of the label), increase the form edge offset.
Note: In order for the form edge settings to take effect, you must download the format 2 or 3 times. This is an idiosyncrasy of Datamax printers.	
Label Gap	For continuous stock, this setting is used to add space between printed labels. The settings available are in increments of 1/100 of an inch.

Forms Control Section	
Column Offset	This command allows horizontal adjustment of the point where printing begins. This feature is useful when a single format must be printed on several different types of labels that already have printed information.
Row Offset	This command allows vertical adjustment of the point where printing begins. This feature is useful when a single format must be printed on several different types of labels that already have printed information.
Label Applicator	Enables integration with equipment that picks the label from the printer and places it on a package.
Label Present	The printer presents each label and waits for the label to be removed before continuing. While in "label present" mode, Loftware Label Manager receives status information from the printer indicating that a label is being sensed by the sensor and the printer does not print labels if a label is detected.
Internal Batch Mode	Internal batch mode enables communication between the Datamax printers and a dumb terminal When internal batch mode is enabled, the Datamax printer directly sends information that is displayed on the terminal.
Cutter Engaged	This option turns the cutter on or off. Consult your printer manual for hardware availability.

Forms Control Section	
Download Truetype Fonts	This option instructs Loftware Label Manager to download TrueType fonts to the Datamax printer's memory module. If this option is not enabled (or is not available for your model) and a TrueType font is selected, the TrueType font is sent to the Datamax printer in the form of a graphic. To download TrueType fonts into the printer's memory, you must have the appropriate memory module and firmware versions, which are 2.01 or higher. Consult your manufacturer's manuals for details. **Note:** The Download TrueType Fonts function, when enabled in Printer Setup, does not download TrueType fonts into the printer's memory module when test-printing label formats from Loftware Label Manager. When this feature is enabled and TrueType fonts are defined on your label, test printing is extremely slow. Loftware suggests disabling the **Download Truetype Fonts** feature temporarily while designing and test printing labels. This downloads TrueType fonts as images, speeding up the test printing process. Once the label format is designed and you are ready to start using Loftware's On-Demand or Range Printing modules, go back into the printer setup dialog box and enable TrueType fonts. The very first time you print a label format using TrueType fonts in one of these modules, the initial download time is extended while fonts are downloaded to the printer's memory module. Subsequent downloading of these fonts does not occur again until a new label format is requested. **Note:** Refer to your printer manual to determine whether a specific printer has native TrueType font downloading capabilities.
Set Label Length	When enabled, the label length is sent to the printer. The length of the label is the height or width value specified in Label Specifications section of the Label Setup dialog box. Whether height or width is used is dependent on print orientation.
Pre 2.01 Firmware	Changes in firmware affect the commands that the printer accepts. Line properties including boxes and borders are affected. Check this box if your Firmware is Pre 2.01.
New Firmware	Checked by default. Allows for larger line widths in barcodes.
Send Options (Label/Printer)	When enabled, all label and printer options set are sent to the printer.

Advanced Options Section	
Memory Module	The Memory Module option is used to specify which memory module(s) to download formats, graphics, and fonts to. The choices are: None, Module A, Module B, or Module C (Emulation Mode) Prodigy Plus Printers, for example, have an A or B Memory Module Card Slot in the front of the printer. Citizen Printers have an internal Memory Module C. If you have a Citizen Printer that you are running in Prodigy Plus Emulation, you would choose Module C (Emulation Mode) from the drop down list. Consult your printer manual or representative for more information about what modules are available for each printer model.
Clear Memory Module	When checked, the memory module is cleared each time a label format is sent. If unchecked, this prevents the memory module from being cleared before each label format is sent, thus potentially saving time. This option should only be used if enough memory is present to allow the module remain uncleared when a format is sent.
Symbol Set	The Symbol Set option selects the scaleable font's symbol set. Consult the appendix section of your printer manual for a description of the character set.
Double-byte Symbol Set	This option allows you to choose a variety of Double-byte symbol sets, if your printer has the capability.
Scaleable Font Processor	This allocates scaleable font processor memory on the printer, but only if the option **send to printer** is checked. This option works with the XL, Ovation 2, Datamax Prodigy Max, Datamax Prodigy Max 300dpi, DMX 300, 800 and PE42.

Custom Command Section	
Note: The Custom Command option is used when a non-typical function is required when printing. Refer to the printer's programming manual for commands that may be used.	
DPL Command	
Send Command	

Note: Commands are printer model and firmware specific. Contact the appropriate printer representative for programming language questions.

RFID Options Section	
Retry Attempts	This setting determines the number of times to retry in case of initial failure.

Datamax Printer Capabilities and Limits

Capability	Description
Faster Throughput	For faster throughput always use a parallel port interface.

Capability	Description
Printed Barcode Does Not Match the Design	It is possible to define a combination of attributes, such as line width and ratio that the printer cannot produce, or might print in one orientation but not another. Under these conditions, the printer may print the closest possible barcode. This usually occurs when you define a barcode with line width 1. The printer sometimes promotes this to a line width 2 barcode, resulting in a printed barcode that is twice as long as desired.
Datamax Incrementing/Decrementing Fields	When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called Native Mode. When printing in Native Mode, control returns to the computer almost immediately. Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called Extended Mode. In Extended Mode, the **Printing** dialog box shows the line "Printing Label x of y" and control does not return to the computer until the entire series of labels is printed.
Datamax: Label Size	The label size is used as a frame of reference. When you rotate your label, or when you rotate the printing of a label, it is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

Datamax Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. Does not let you retry, label does not print.	Error message. Does not let you retry, label does not print.	Error message. Does not let you retry, label does not print.	Error message. Lets you retry, the label prints when the error is corrected.
COM	Error message. Lets you retry so the label prints	Error message. Lets you retry so the label prints.	Error message. Lets you retry so the label prints.	Error message. Lets you retry so the label prints.
USB	Received 'port not found' error. USB port not shown in Port combo of Printer |Connection	Error Message. Printing starts when cable reconnected.	Error Message. Printing resumes when stock added.	Received 'port not found' error. Label prints when head is put down.
Spooled Locally	No Loftware printer error but has a Windows printer error. Lets you retry, the label prints.	No Loftware printer error but has a Windows printer error. Lets you retry, the label prints.	No Loftware printer error but has a Windows printer error. Lets you retry, the label prints.	No Loftware printer error but has a Windows printer error. Lets you retry, the label prints.
Spooled to Shared	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
Spooled to PrintServer	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.
Direct IP	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.

Eltron Printers

This section provides information specific to the Eltron family of printers.

Supported Printer Models

Loftware supports the following Eltron printer models.

Barcode Label Printers			
2044/46	3642	Companion +	UPS 2348
2242	3742	Eclipse	UPS 2442
2348		LP Plus	UPS 2443
2542		Orion	UPS 2543
2622		Strata	
2642		Transport	
2722			
2742			
2746			
2824			
2844			

Supported Printer Family Drivers

Certain Eltron printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Eltron printers.

- ZPLII
- EPL2

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Supported Features

Feature	Description
Image Support	Images are downloaded and stored in the printer's image memory. Loftware Label Manager "remembers" images that are sent to the printer and only resends an image if the image is changed.
Supported Fonts	Some of the native fonts supported by Eltron printers: ▪ 8X12 ▪ 10X16 ▪ 12X20 ▪ 14X24 ▪ 32X48
TrueType fonts are downloaded as graphics on the Eltron printers.	

Printer Control and Configuration

The Loftware Label Manager Design application allows you to configure global printer settings, which are saved in the label format using File | Media Setup | Label Options.

Individual workstation printer settings may be configured using File | Devices | Options from within the Design or any of the Print applications: On Demand, Range.

Many of the settings in the printer do not take effect until the printer is re-booted. In the **Device Options** dialog box, clicking **Send To Printer** sends the currently selected options to the printer. All Label Options are sent to the printer every time a label is printed.

Eltron Options

Eltron Options may be label-specific or printer-specific.

Eltron Label Specific Options

Label Specific Options (LSOs) can be accessed when you click the **Label Options** from the **Label Setup and Properties** dialog (F5).

Label Options Section	
Print Speed	The range of available print speeds varies with the selected printer type. This setting controls the speed at which the paper is fed when printing. The combinations of print speed and head temperature control the print quality of the label.
Print Direction	This setting affects the orientation at which the label is printed. The Eltron printers can internally rotate the label 180 degrees. When Top is selected, the printer begins printing at the top of the label. When bottom is selected, the label is rotated 180 degrees and printing begins at the bottom.
Head Temperature	Allows you to control the darkness of the print. 5 is nominal, setting the temperature higher than 5 causes the label to print darker. Setting the temperature to lower than 5 causes the label to print lighter. Values from 0 to 7 for 2122/2142 and 0 to 15 for 2242/2044/2046/2642.
Form Number	Eltron printers have the ability to store multiple forms in memory. In order to store multiple forms, a unique name must be generated for each form. This option is used to provide a unique form name.

WARNING! Printing Blank Labels? In some instances while printing labels in thermal transfer mode, blank labels advance out of the printer. If this happens, try increasing the head temperature in Label Specific Options (F5) and test print your label again. This symptom may occur if the ribbon being used requires hotter head temperatures to transfer the ink from the ribbon onto the paper substrate.

Label Cut Options Section	
Cutter	Use Printer Cut Options uses Cut Options set in the Printer Specific Options section. When enabled, an optional label cutter is set to cut a label after printing using settings specified in this dialog.
Cut Every	Allows the cutter to skip a given quantity of labels before cutting.
Cut Position	This command is sent to a printer to provide precise cut placement. The default is 100 dpi.

Custom EPL	
Command Field	You can enter printer commands otherwise not available in the Loftware Label Manager dialog boxes.

Custom EPL	
Send Command	Select when to send the printer command. ■ After Control Strings ■ After Label ■ Before Label

Eltron Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the **Device Configuration** grid and clicking **Options**.

The printer options available will vary based on the printer model selected. Certain options are only available with the EPL2 Family Driver.

Settings are in dots. Use the dots per inch (dpi) for your printer to find the proper value. For example, if your printer has 203 dpi and you want to set a skip distance of 1 inch, specify a value of 203 for the skip distance.

Label Options and Reference Point Sections	
Stock Type	■ Direct Thermal (No Ribbon) - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary. ■ Thermal Transfer (Ribbon) - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath, heating the ribbon material and melting it onto the label. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary.
Supply Type	■ Die Cut - Stock that has gaps between each label. ■ Continuous - No gaps, notches, or perforations between labels. ■ Mark Stock - Black mark found opposite print side.
Gap Length	The space in between labels. When printing on continuous stock, this setting can be used to add space between printed labels.
Offset Length	This is a setting found on Butterfly Labels. It sets the length between the top edge of the label, and the indented portion of the label. The Offset Length is set in dots per inch.
X Coordinate / Y Coordinate	These values are measured in dots. This command is used to move the reference point for the X and Y-axes. The reference point command functions similarly to the Label Home command found in File | Media Setup. Default reference points vary depending upon whether the selected print direction is top or bottom.

Print Adjustment Section
Note: This section is available with the EPL2 Family Driver.

Print Adjustment Section	
X Coordinate / Y Coordinate	These values are measured in dots. This command is used to move the reference point for the X and Y-axes. The reference point command functions similarly to the Label Home command found in File | Media Setup. Default reference points vary depending upon whether the selected print direction is top or bottom.
Gap Length	The space in between labels. When printing on continuous stock, this setting can be used to add space between printed labels.
Offset Length	This is a setting found on Butterfly Labels. It sets the length between the top edge of the label, and the indented portion of the label. The Offset Length is set in dots per inch.
Media Feed Adjustment	The amount of stock to advance after printing measured in dots.
Send Media Feed Adjustment	Sets whether or not the Media Feed Adjustment is sent to the printer.

Options Section	
Set Label Width	This command should be set on when labels narrower than the print head are printed. If the label width equals the print head width, you may leave Set Label Width off and the printer automatically centers the printing of the label.
Tear Off Mode	The tear off mode is the default mode.
Form Backup	This command instructs the printer to retract the label before printing.
Sensor Reverse	This option reverses the Through Sensor Operation, which interprets a blockage of light as a gap. This option allows the through sensor to be used when printing transparent labels with a black stripe backing.
Dispense Sensor	When enabled, the printer presents each label and waits for the label to be removed before continuing. On the P2242 printer, the feed button must be pressed to print the next label. Available on Orion, Strata, and P2242 only.
Dispense Tap	When enabled, the printer presents each label and waits for the feed switch to be pressed before printing the next label. This mode is commonly used when printing multiple copies of liner-free labels. Available only on the P2242.
Batch Print & Cut	When enabled, this option uses the Print Quantity and Copies values to control the cutter operations. The cut instruction is executed when a batch of jobs has completed printing.

Enable Dump Mode	When enabled, the printer is set in diagnostic dump mode. Available on the P2242 only.
IRDA Interface	Enables optional IRDA Interface. This option is only available on the P2242.
Send Options	When selected the following options are sent to the printer with each label. ■ Label Options ■ Print Adjustment ■ Options ■ Cut Options ■ Advanced Options When send options is not selected, only Custom Commands and if Memory Allocation | Send Command is selected, Memory Allocation options are sent to the printer

Cut Options Section	
Label Cutter	Enables an optional label cutter. When enabled, the cutter is set to cut a label after printing.
Cut Every	The "Cut Every" settings range from 1 label to 250 + labels. The label is cut after the number specified. For example, if "2" is specified, the label is cut after every 2 labels.
Cut Position	This command is sent to the printer to provide precise cut placement. The default is 100 dpi.

Memory Allocation Section	
Send Command	Select Send Command to enable the Memory Allocation options, and send them to the printer when a label is printed.
Formats	If you have a very large number of fields on your label, you may need to increase this value; otherwise, the default of 5k should be fine.
Write Graphics to Image Buffer	In printers that support sending images directly to the image buffer, selecting Write Graphics to Image Buffer may improve print speed. If this setting is not selected, images are saved to the printer's memory, and recalled in the label format. Contact your printer manufacturer to find out if your printer supports sending images directly to the image buffer.
Graphics	To use images on your labels, you may need to increase the memory allocated for Graphics. This allows the printer to store the image files sent to it by Loftware Label Manager. If the value set is too small, Loftware Label Manager displays an error message.
Image Buffer	The image buffer memory is the area where the active print image is temporarily stored. To calculate the exact memory needed using the following formula: Printer Width = 2" - Label height in inches x 12 KB Printer Width = 4" - Label height in inches x 22 KB

Note: You cannot allocate more memory than is installed in the printer.

Advanced Options Section	
Character Set	This command selects a character set for printing. Consult your printer manual for a more complete description of supported character sets.

Custom Command Section
The custom command option sends printer commands otherwise not available in the Loftware Label Manager dialog boxes.

Eltron Printer Capabilities and Limits

Capability	Description
Faster Throughput	For faster throughput always use a parallel port interface.
Printed Bar code Does Not Match the Design	It is possible to define a combination of attributes, such as line width and ratio that the printer cannot produce, or might print in one orientation but not another. Under these conditions, the printer may print the closest possible bar code. This usually occurs when you define a bar code with line width 1. The printer sometimes promotes this to a line width 2 bar code, resulting in a printed bar code that is twice as long as desired.
Eltron Incrementing/ Decrementing fields	When the printer is capable of doing the incrementing / decrementing internally, it is instructed to do so. This is called Native Mode. In Native Mode, control returns to the computer almost immediately. Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called Extended Mode. In Extended Mode the Printing dialog box shows the line "Printing Label x of y" and control does not return to the computer until the entire series of labels is printed.
Label Size	The label size is used as a frame of reference. When you rotate your label, or when you rotate the printing of a label, it is imperative that Loftware Label Manager design knows the exact size of the stock on which you are printing.

Eltron Error Messages

	Printer Turned Off	**Cable Disconnected**	**No Stock**	**Print Head Up**
LPT	Error message. Does not let you retry, the label is not printed.	Error message. Does not let you retry, the label is not printed.	Error message. Does not let you retry, the label is not printed.	Error message. Allows you to retry, the label prints.
COM	Not Tested	Not Tested	Not Tested	Not Tested
USB	Received 'port not found' error. USB port not shown in Port combo of Printer |Connection	Error Message. Printing starts when cable reconnected.	Error Message. Printing resumes when stock added.	Error Message. An inconsistent result with printing when head is put back down.

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
Spooled Locally	No Loftware error message, but displays Windows error message. Allows retry, labels print.	No Loftware error message, but displays Windows error message. Allows retry, labels print.	No Loftware error message, but displays Windows error message. Allows retry, labels print.	No Loftware error message, but displays Windows error message. Allows retry, labels print.
Spooled to Shared	No Loftware error message but has Windows error message. Allows retry so labels print.	No Loftware error message but has Windows error message. Allows retry so the labels print.	No Loftware error message but has Windows error message. Allows retry so the labels print.	No Loftware error message but has Windows error message. Allows retry so the labels print.
Spooled to Print Server	No error message. All labels print after the printer is turn back on.	No error message. All labels print after the printer is reconnected.	No error message. All labels print after the printer is re-stocked.	No error message. All labels print after the print head is put down.
Direct IP	No error message. All labels print after the printer is turn back on.	No error message. All labels print after the printer is reconnected.	No error message. All labels print after the printer is re-stocked.	No error message. All labels print after the print head is put down.

EXE Printers

Supported Printer Models

Loftware supports the following EXE printer models.

- MR400
- MR400e
- MR410
- MR410e

Related Information
These printers use the same language as SATO Printers. Please refer to the SATO Section for error messages and other information regarding EXE printers.
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

AMT Datasouth (Fastmark) Printers

This printer guide section provides information specific to the AMT Datasouth Fastmark family of printers. These printers use both Datamax and Eltron Languages. The following sections show which printer section to look under regarding PSO's, error messages, and other information.

Supported Printer Models

Loftware supports the following AMT Datasouth (Fastmark) printer models.

Note: Refer to the Datamax Options section or the Eltron Options section depending on the model.

Datamax	Eltron
FM403 PPLA	FM402 PPLB
FM4402 PPLA	FM403 PPLB
FM4602 PPLA	FM4402 PPLB
FM4603 PPLA	FM4602 PPLB
FM6602	FM4603 PPLB

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Fox IV Information

This section provides information specific to the Fox family of printers. These printers use SATO, Zebra, Datamax, Intermec and Printronix Printer Languages, the following table identifies which printer section to look under regarding PSO's, error messages, and other information.

Supported Printer Models

Loftware supports the following Fox IV printer models.

SATO OEM	Datamax OEM	Zebra OEM	Intermec OEM	RFID Printers Printronix OEM
FOXIV Model 6159	FOXIV Model 2000	FOXIV Model 5113	FOXIV Model 4051 203dpi	FOXIV SLPA 7204e RFID
FOXIV Model 6160	FOXIV Model 2000 300dpi	FOXIV Model 5143	FOXIV Model 4051 406dpi	FOXIV SLPA 7304e RFID)
FOXIV Model 6185	FOXIV Model 3000	FOXIV Model 5173	Printronix OEM	
FOXIV Model 6190	FOXIV Model 3600	FOXIV Model 6210	FOXIV Model 7002	
		FOXIV Model 6270	FOXIV Model 7003	

Supported Printer Family Drivers

Certain Fox IV printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Fox IV printers.

- ZPLII (ZSim)
- IPL
- Direct Protocol

Related Information
See Printronix Options page for LSO and PSO settings.
Refer to the RFID Devices and Tag Types section for information on tag types supported by the FOXIV RFID printers.
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

InfoPrint Solutions (Formerly IBM) Information

This printer section provides information specific to the InfoPrint family of printers. The supported InfoPrint printers include:

Supported Printer Models

Loftware supports the following InfoPrint Solutions printer models.

IBM	Infoprint	RFID
IBM 4400-004 (203 dpi)	Infoprint 6700 Model 5504-R40 (203 dpi)	Infoprint 6700 Model 5504-R40 (203 dpi) RFID
IBM 4400-004 (300 dpi)	Infoprint 6700 Model 5504-R60 (300 dpi)	Infoprint 6700 Model 5504-R40 (300 dpi) RFID
IBM 4400-006 (203 dpi)	Infoprint 6700 Model 5504-R40 (300 dpi)	Infoprint 6700 Model 5504-R60 (203 dpi) RFID
IBM 4400-006 (300 dpi)	Infoprint 6700 Model 5504-R60 (203 dpi)	Infoprint 6700 Model 5504-R60 (300 dpi) RFID
IBM 4400-008 (203 dpi)	Infoprint 6700 Model 5504-R80 (203 dpi)	Infoprint 6700 Model 5504-R80 (203 dpi) RFID
IBM 4400-008 (300 dpi)	Infoprint 6700 Model 5504-R80 (300 dpi)	Infoprint 6700 Model 5504-R80 (300 dpi) RFID

Supported Printer Family Drivers

Certain InfoPrint (IBM) printers may support the use of other printer languages. The following Printer Family Drivers can be selected with InfoPrint (IBM) printers.

- ZPLII (ZGL)
- IPL (IGL)

Related Information
These printers use the same language as Printronix Printers. Refer to the Printronix Section for printer-specific options, error messages and other information regarding InfoPrint printers.
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.
Refer to the RFID Devices and Tag Types section for information on tag types supported by the IBM RFID printers.

PCM Image-Tek (Imtec) Information

This section provides information specific to the PCM Image-Tek printers. PCM Image-Tek products incorporate printers from Intermec and Zebra families. Please refer to the appropriate printer section for the printer specific options, error messages, and other information.

Supported Printer Models

Loftware supports the following Imtec printer models.

Zebra Printers (OEM)	Intermec Printers (OEM)
Imtec Apply Pro w/140xiII	Imtec Value Pro w/3240
Imtec Apply Pro w/170xiII	Imtec Apply Pro w/4220E
Imtec Apply Pro w/90xiII	Imtec Protector w/3440
Imtec Apply Pro w/90xiII 600dpi	
Imtec Value Pro w/90xiII	
Imtec Value Pro w/140xiII	
Imtec Protector w/90xiII	
Imtec Protector w/90xiII (600 dpi)	
Imtec Protector w/140xiII	
Imtec Protector w/170xiII	

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Intermec and UBI Printers

This section provides information specific to the Intermec family of printers.

Supported Printer Models

Loftware supports the following Intermec printer models.

Barcode Label Printers		
3100	4000	4100
4406	4630	8625/38
8635/36	8646	Easy Coder 3240
Easy Coder 3400	Easy Coder 3400B	Easy Coder 3400C
Easy Coder 3400D	Easy Coder 3400E	Easy Coder 3440
Easy Coder 3600	Easy Coder 4400	Easy Coder 4400B
Easy Coder 4400C	Easy Coder 4400D	Easy Coder 4420A/B
Easy Coder 4420e	Easy Coder 4440A/B	Easy Coder 4440e
Easy Coder 4830	Easy Coder 501E	Easy Coder 501XP
Easy Coder 601E	Easy Coder 601XP	Easy Coder 7421
Easy Coder 7422	Easy Coder 91	Easy Coder C4
Easy Coder E4	Easy Coder F2	Easy Coder F4
Easy Coder PC4 (EPL)	Easy Coder PC41 (IPL)	Easy Coder PD4 (203 dpi)
Easy Coder PD4 (300 dpi)	Easy Coder PD41 (FP)	Easy Coder PD41 (IPL)
Easy Coder PF4i (FP)	Easy Coder PF4i (IPL)	Easy Coder PM4i (FP)
Easy Coder PM4i (IPL)	Easy Coder PX4i (FP)	Easy Coder PX4i (IPL)
Easy Coder PX6i (FP)	Easy Coder PX6i (IPL)	

Loftware supports the following Intermec RFID printer models.

RFID Tag Printers
Easy Coder PM4i RFID (FP)
Easy Coder PM4i RFID (IPL)

UBI Printers

This section provides information specific to the UBI family of printers.

Note: The following printers are in End-Of-Service status with Intermec. See the The Intermec End-of-Life (EOL) Process Web page for more information and a list of replacement printers.

Barcode Label Printers		
301	501E	601E

Printer Status (Serial only)

If the status report is positive, the level of firmware in the printer is also displayed. If there is a status problem, a corresponding error message is displayed.

Supported Printer Family Drivers

Certain Intermec printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Intermec printers.

- ZPLII (ZSim)
- EPL2 (ESim)
- IPL
- Direct Protocol

Pass Through Fields

Intermec printers using IPL printer language support the use of Pass Through fields. A Pass Through field allows you to fully define a label field with the field's data. You can insert printer language directly into a label field and pass IPL commands through the Loftware native driver directly to your printer. This may allow you greater control over a barcode, and give you the ability to include options that may not be supported by Loftware's native driver.

See Pass Through Fields in the Customizing Labels section of this guide for more information and instructions on creating Pass Through fields.

Related Information
Refer to the RFID Devices and Tag Types section for information on tag types supported by the Intermec RFID printers.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.

Interface	Description
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Intermec (IPL) Supported Features

Image Support

Images are downloaded and stored in the printer's UDC (image) memory. Loftware Label Manager remembers images that are sent to the printer and only resends an image if the image is changed.

Supported Fonts

Name	Notes
5x7 (1)	Magnify 1 to 90 horz. and vert.
7x9	Magnify 1 to 90 horz. and vert.
7x11	Magnify 1 to 90 horz. and vert.
10x14	Magnify 1 to 90 horz. and vert.
8 Point	Magnify 1 to 33 horz. and vert.
12 Point	Magnify 1 to 20 horz. and vert.
20 Point	Magnify 1 to 20 horz. and vert.
OCR A	Magnify 1 to 33 horz. and vert.
OCR B	Magnify 1 to 33 horz. and vert.
Outline Swiss (2)	0.005" to 2.94" (<1 to 212 points)
Outline Swiss Bold (3)	0.005" to 2.94" (<1 to 212 points)

Name	Notes
Dutch Roman (3)	0.005" to 2.94" (<1 to 212 points) 3240 3440 prtrs only
Pointable (4)	Point sizes 8, 10, 12, 16, 20, 24; Magnify 1 to 20 times
Pointable Bold (4)	Point sizes 6, 8, 10, 12, 16, 20, 24; Magnify 1 to 20 times

Notes: (1) The 5x7 font is not available for the 4400 and 4406 printers. (2) For the 3400 printer, firmware version 1.2 or higher and extended memory are required to access the Outline Swiss font. For the 4100 printer, firmware version 2.4 or higher and extended memory are required to access the Outline Swiss font. (3) The Outline Swiss Bold and Dutch Roman fonts are currently not available with the 3100 printer. (4) The Pointable and Pointable Bold fonts are currently available for the 4400C, 3400B, 3600 and 3240 printers.

Intermec Fingerprint/Direct Protocol Supported Features

Image Support

Images are downloaded and stored in the printer's image memory. Loftware Label Manager remembers images that are sent to the printer and only resends an image if the image is changed.

Supported Fonts

Most Direct Protocol printers come standard with scaleable fonts. Consult your printer manual for available fonts. TrueType fonts are downloaded to the Intermec Direct Protocol printers as graphics.

Intermec - Printer Control and Configuration

The Loftware Label Manager Design application allows you to configure global printer settings that are saved in the label format using File | Media Setup and File | Media Setup | Label Specific Options.

Individual workstation printer settings may be configured using File | Devices from within the Design or any of the Print applications: On Demand, Range.

Many of the settings in the printer do not take effect until the printer is re-booted. In the device options dialog box, clicking **Send Options** sends the currently selected options to the printer. All label-specific options are sent to the printer every time a label is printed.

For 4400 / 4400A / 4400B 4400C / 4400D / 4400E users, the File | Media Setup | Label Specific Options duplicate some of the functionality of the printers control panel. For 3400 and 4100 users, Loftware Label Manager provides the only way to configure many of the settings in the printer.

Intermec Printer Language (IPL) Options

Intermec Printer Language Options may be label-specific or printer-specific. These options are for Intermec printers that use the Intermec Printer Language or IPL.

Intermec Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Option	Description
Format Number	Specifies the areas of RAM in which the label format is to be stored.
Print Speed	The range of available print speeds varies with the selected printer type. Note that the printer may user a slower print speed than you specify in order to maintain print quality. Certain Intermec printers allow print speeds in .5 IPS increments.
Head Temperature	Head Temperature allows you to control the darkness of the print. Zero (0) is nominal, setting the temperature higher than 10 causes the label to print darker. Settings lower than 10 cause the label to print lighter.
Media Sensitivity	This number specifies the amount of heat required by the printhead to image a label. Look at the sensitivity label located on the label stock, and check the last three digits of the 15-digit number. These three numbers stamped on the label give you the number you use for this setting.
Cut Interval	This value is used to determine how many labels to print before cutting. This option is only used when "Use Label Specific Options Cut Interval" is enabled. **Note:** Loftware Label Manager defaults to using the Cut Immediate command (<SO>) in conjunction with disabling the cutter (<SI>c0) per Intermec recommendations. Example: The cutter is enabled, (<SI>c1) and the printer prints a quantity of 5. The job is native, and the printer cuts after each label. The only way to enable the cutter to cut after a certain number of labels is to either: Set [INT44xx]CutImmediate=0 Use custom command of <SI>c1 in the PSOs. Using #2 and unchecking Force Extended should allow the cutter to cut after the print job.
Custom Command	The custom command field allow you to enter and send label commands otherwise not available in the Loftware Label Manager dialog boxes. This command is sent to the printer regardless of the state of the Printer Specific Option Custom Command.
Use Label Specific Options Cut Interval	Enabling this feature disables any cutting options enabled in the Printer Options section under Label Handling. All cutter system information is overridden and stored directly in the label format.
Use Direct Graphics	Enables Direct Graphics mode on printers that support this option. The download time of the image is reduced, but images are sent for each label. This eliminates the graphic size limitations that are normally encountered when storing graphics in non-volatile RAM. The only size limitation when using direct graphics is the amount of memory installed on the printer. **Use Direct Graphics** is selected by default.

Option	Description
Media Sensitivity Guide	The sensitivity for a particular type of media and ribbon is critical to achieving high quality printing. If the Media Type you are using is listed, select it, and then click **Apply** to achieve the recommended sensitivity setting.

Intermec Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

The printer options available will vary based on the printer model selected. Certain options are only available with the IPL Family Driver.

Advanced Options Section	
Language	Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.
Enable IBM Translation	Enabling IBM Translation allows IBM compatible characters to replace standard ASCII characters based on the current printer language selected.
Print Mode	Displays Use Label Setup Resolution to set printer Emulation.
Custom Command	The custom command option sends printer commands otherwise not available in the Loftware Label Manager dialog boxes. For example, to switch an advanced printer to 86xx mode, send the custom command: <ESC>c
Send Options (Label/Printer)	When enabled, all label and printer options set are sent to the printer. Disable this option to retain the settings set at your printer.

Label Options Section	
Media Type	■ Thermal Transfer (Ribbon) - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath heating the ribbon material and melting it onto the label. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary. ■ Direct Thermal (No Ribbon) - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print decrease/increase the speed and increase / decrease the heat as necessary.
Label Stock	■ Die Cut - Stock that has gaps between each label ■ Continuous - No gaps, notches, or perforations between labels ■ Mark Stock – Stock with a black mark found opposite print side

Label Handling Section	
Batch	Normal printing mode; labels are continuously printed and fed out of the printer.

Label Handling Section	
Applicator	A specialty device that is integrated with the printer that allows labels to be picked up from the printer and placed on a product. Typical for assembly line production.
Self-Strip	Self-strip handling requires that the stock in the printer be properly fed through the self-strip attachment on the printer. Consult your Intermec manual or service technician for further assistance. While in self-strip mode, the printer presents each label and waits for it to be removed before continuing. The printer does not print labels if there is a label at the strip pin.

Cut Options Section	
Cut or Label Cutter	These options require that a cutter be installed on the printer. With some Intermec printers, specifically the Intermec 4400, you may have to set certain options on the printer.
Cut Every	Allows the cutter to skip a given quantity of labels before cutting.

Forms Control Section	
Settings are in dots. Use the dots per inch (dpi) for your printer to find the proper value. For example, if your printer has 203 dpi and you want to set a skip distance of 1 inch, specify a value of 203 for the skip distance.	
Top of Form	This setting determines how close to the leading edge of the label printing occurs. Valid values are -20 to 4000, with 20 as the default setting. If you need to move the printing closer to leading edge of the printer, lower the value. If you need to move the printing away from the leading edge of the printer, choose a higher value. This setting is usually only critical when you are using small labels.
Max Label Length	Maximum label length increases the allowed printing length of the label. Valid values are 200 to 4800 dots. For example, a 203 dpi printer allows you to set a value from .5" to 24". Setting maximum label length to 2400 allows you to print a 12" label on an advanced Intermec printer. The default for maximum label length is 1000 dots.
Image Bands	The Image band setting is used by the printer to decide how much of the label's format to "image" before starting to print. If the image bands are set correctly, they can greatly improve printer throughput. However, if they are set incorrectly, they can degrade performance. The number of image bands available is determined by the amount of memory installed in your printer. Consult your printer manual for the available range of image bands. If this parameter is set to 0, the LLM uses the current printer setting.
Retract Distance	If this value is a non-zero value (try 1 or 2), the label is ejected this many "dots" after printing. The printer retracts, or backfeeds, before printing the next label. This is useful for advancing labels to the tear bar or cutter. Depending on your version of printer firmware, the label may only advance/retract a set amount when you are using die cut or mark stock, regardless of the value specified in the Retract parameter. Consult Intermec for information on possible firmware upgrades. **Note:** If you are using die cut stock or mark stock and have a 3400 or 4100 printer, you must also check the "Feed After Print" option to enable the retract feature.
Skip Distance (Continuous Stock Only)	This setting is the distance to advance the label after all the fields have been printed. This setting is used to create white space between labels.

Forms Control Section	
Label Rest Point	Label rest point adjusts the point at which the printer presents the labels for removal. This command is commonly used with the self-strip option. Label retract is available to retract the label back to the correct starting position for the next printed label.
Enable Label Retract	This feature causes the printer stock to move back into the printer under the printer head, print the label, then feed the label out to the tear off bar.
Feed After Print	Feed After print instructs the LLM to add a Form Feed (<FF>) after the label is printed. Generally, this is not necessary but it may be required for certain applications.
Set Label Width	(440x printers only) The 440x printers have a centered paper path so the label width is used to position the printing on the label. This option should be enabled in most cases.

Intermec Fingerprint/Direct Protocol Options

Fingerprint/Direct Protocol Options may be label-specific or printer-specific. These options are for Intermec printers that support the Fingerprint/Direct Protocol printer language.

Direct Protocol Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

UBI Label Specific Options	
Format	This allows you to choose a unique format number for storage in the printer's memory. Read the Owner's Manual as all files in the printer may be permanently erased by using this instruction.
Print Speed (mm/s)	The rate that the printer prints. The range is 50-400 millimeters per second. See the documentation for your printer to find the allowed values.
Performance	The performance range varies with the selected printer type. In this case, the choices are Normal, High, or Ultra High.

Label Cut Options Section	
Cut Option	Choose Printer Cut Options (as set in PSOs, which is the default setting) or the Label Cut Options which may be chosen along with the following setting.
Feed Length	Zero is the default, but the Cut Interval may be set to cut after any number of labels.

Advanced Options Section	
Character Set	Allows you to choose from a list of Character Sets or use the Character Set from the PSOs.

Direct Protocol RFID Options

The following sections are available when designing RFID tags for Intermec Fingerprint (FP) language RFID printers.

Note: The Intermec PM4i RFID (FP) Printer is created with UBI printer language.

Printer Options	
Use Label or Printer Options	This allows you to use either the Intermec Label Specific Options or the options set in Printer Specific Options (PSOs).
Write Protect RFID Data	When checked, this protects the RFID data written to the tag from being overwritten.

RFID RFID Setup Options Section	
Send Setup Options to Printer	When checked, selected settings will be used.
Void Text	This is the text that will be printed across the label after write retries fail.
Label Retries per Label	This sets the number of attempts to write to the label after an unsuccessful try.
Tag Adjust	The position of the label will, if necessary, be adjusted before trying to write data to the tag. The Unit of Measure is Dot Rows.

Direct Protocol Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

The printer options available will vary based on the printer model selected. Certain options are only available with the Direct Protocol Family Driver.

Forms Control Section	
Start Adjust	This can be a negative or a positive number of dots. A positive Start Adjust value will feed out the specified length of media before the printing starts. A negative value will pull back the specified length of media before the printing starts.
Stop Adjust	This can be a negative or a positive number of dots. A positive Stop Adjust value will increase the normal media feed by the specified value after printing is finished. A negative value will decrease the normal media feed by the specified value after printing is finished.
Refer to your printer guide for recommended feed adjustment settings.	
X-Start	This specifies the start of the printable area.
Label Taken Sensor	This detects if the printed label has been removed before the next one is printed.
Disable Print Key	This disables the <Print> key requiring the key to be pressed to print a label.
Ribbon Saver	This turns the ribbon saver "auto economy" feature on in supported printers.
EasySet System	This uses the optional EasySet barcode wand or scanner. Certain printer options are disabled.

Cutter Options Section	
Feed Length	Zero is the default, but this may be set to cut after any number of labels.
Enable Cutter	Enables an optional label cutter. When enabled, the cutter is set to cut a label after printing.

Media Options Section	
Media Type	■ Fixed Length Strip – This is used for continuous stock. The length of the media that will be fed out depends on the length of the print window. ■ Label With Gaps – This is used for adhesive labels mounted on liner. ■ Ticket With Gaps – This is used for tickets and tags with detection slits. ■ Ticket With Marks – This is used for labels, tickets, or continuous stock provided with black marks at the back. ■ Variable Length Strip- This is used for continuous stock. The length of each copy depends on the size of the print images.
Paper Type	■ Thermal Transfer - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath heating the ribbon material and melting it onto the label. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary. ■ Direct Thermal - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print decrease/increase the speed and increase / decrease the heat as necessary.

Media Settings Section	
Contrast	Controls the darkness of the printed label.
Ribbon Constant	Heat Setting. The range is 50-115.
Ribbon Factor	For thermal transfer printing. The range is 10-50.
Material	Displays the Material type based on the selected Media Type.
Media Settings Type	Select one of the following options to change the available settings in the Media Sensitivity Guide. ■ Material ■ Media Codes ■ Media Values

Media Sensitivity Guide Section
The sensitivity for a particular type of media and ribbon is critical to achieving high quality printing. If the Media Type you are using is listed, select it, and then click **Apply** to set the recommended sensitivity setting. The corresponding settings in the Media Settings section will be refreshed. Change the way you select the Media type by selecting a different option from the **Media Settings Type** field.

Advanced Options Section	
Memory Module	If a memory card is attached to the printer, you can select it. This option is not sent to the printer when labels are printed, nor is it sent when **Send Options** is clicked. The value you select is stored, so it can be used for informational purposes.
Character Set	Several printer languages are available that can print international characters that are not available in the U.S. character set. If your printer supports it, select a different Character Set.
Ext Font Location	Specify the source of additional fonts.

Custom Command Section	
Custom Command	Specify printer commands otherwise not available in the Loftware Label Manager dialog boxes. Click **Send To Printer** to send the commands to the printer. **Note:** These commands are NOT sent when labels are printed. This is different behavior than other Loftware drivers that allow custom commands.
Send Options	When enabled, all label and printer options set are sent to the printer. Disable this option to retain the settings set at your printer. **Advanced Options** are always sent to the printer. **Note:** This option is only available with Direct Protocol printers.

Direct Protocol Printer Commands

The printer command buttons are available after selecting the printer from the Device Configuration grid and clicking **Options**.

Command	Description
Send to Printer	Send commands to the printer.
Beep	Sends a command to the printer telling it to make a sound (A 1/4 second beep).
Reboot Printer	Sends a command to the printer telling it to restart. This has the same effect as turning the printer off and on.

Intermec RFID Options

The following sections are available when designing RFID tags for the Intermec IPL RFID printers. To access RFID Options click **RFID Options** from the **Intermec Label Options** dialog.

Printer Options	
Use Label or Printer Options	This allows you to use either the Intermec Label Specific Options or the options set in Printer Specific Options (PSOs).
Write Protect RFID Data	When checked, this protects the RFID data written to the tag from being overwritten.

RFID Setup Options Section	
Send Setup Options to Printer	When checked, settings selected in this dialog will be used for printing the label.
Void Text	This is the text that will be printed across the label after write retries fail.
Tag Adjust	The position of the label will, if necessary, be adjusted before trying to write data to the tag. The Unit of Measure is Dot Rows.
Labels to Retry on Tag Access Failure	This sets the number of attempts to write to the label after an unsuccessful try. Settings range from 0 to 10.

Intermec - Printer Capabilities and Limits

Capability	Description
Faster Throughput	For faster throughput always use a parallel port interface.
Maximum Number of Fields	The maximum number of fields per label format is between 40 and 200, but this varies between printer models.
Maximum Image Size	The maximum size of any image varies among printers. The physical size of the image depends on the resolution of your printer. For 203 dpi printers, this is roughly 3" by 3". Note that the actual size of images that your printer can handle is determined by the amount of RAM installed in your printer.
Images Do Not Print	If images are displayed in Loftware Label Manager label design but do not print, the printer probably does not have enough memory to store the image. If you are using a 440x printer, a "Memory Overflow" message is displayed on the control panel. If you are going to be working with large images, you may need to add additional UDC RAM to the printer. Contact Intermec for information on memory upgrades for your printer.
Printed Barcode Does Not Match the Design	It is possible to define a combination of attributes, such as line width, ratio, etc, that the printer cannot produce, or might print in one orientation, but not another. Under these conditions, the printer may print the "closest possible" barcode. This usually occurs when you define a barcode with line width 1. The printer sometimes "promotes" this to a line width 2 barcode, resulting in a printed barcode that is twice as long as desired.
Disappearing Fields	The Advanced printers do not print any field with an invalid definition. For example, if you define a UPC-A barcode, which requires exactly 11 digits, and then provide alphabetic data at print time, the printer does not print the field. If your label test prints correctly but fields do not print in production printing, check your data carefully to make sure it is valid.
Using CODE 128	The Intermec Advanced printers use "auto-discriminating" Code 128 logic. This means that the printer decides which subset of Code 128 to use based on the data for the barcode. The printer automatically shifts subsets if necessary. While this technique produces the densest possible barcodes, it makes it difficult to implement a specification that requires explicit control of subsets or shifts between various subsets. **Note:** Refer to the section on how to build a GS1-128 (UCC-128) symbology in this guide.

Capability	Description
Intermec Incrementing / Decrementing Fields	When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called Native Mode. When printing in Native Mode, control returns to the computer almost immediately. Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called "Extended Mode." In Extended mode, the Printing dialog box shows the line "Printing Label x of y" and control does not return to the computer until the entire series of labels is printed.
Label Size	The label size is used as a frame of reference when you rotate your label or when you rotate the printing of a label. It is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

Intermec - Font Download and Re-map Instructions

Some Intermec printers are capable of storing fonts. Intermec provides a utility called PrintSet™ that allows TrueType Fonts (TTF) to be downloaded to a memory location.

Note: Contact Intermec for information regarding your printer's capability of storing fonts and for the latest version of PrintSet™.

Loftware Label Manager takes advantage of font re-map by substituting native fonts in the printer and re-mapping them to pre-downloaded TTF fonts. You may re-map and define up to two different fonts in the printer by choosing Options | Preferences | Intermec tab.

Note: The Loftware Label Manager Font Re-Map capability is in addition to the True-Type font category selection in the Loftware Label Manager Design mode Properties Box.

Downloading a True-Type Font from your computer

1. Determine which system font you wish to download. The fonts are typically stored in the WINDOWS\FONTS or WINDOWS\SYSTEM directory as .TTF files.
2. Run the Intermec PrintSet™ utility program. (Make sure all the printer communication settings for PrintSet™ are the same as the Loftware Label Manager printer connection settings.)
3. Select the system font that you want to download under the Configuration menu.
4. Select a user definable font location in printer memory to download this font. (Typically, FONT03 to FONT06 are the first user-definable font locations.)
5. Select **To Printer** from the **DataXfer** menu. This option sends any current update information to the printer.

Important: Do an Options | Test Print from PrintSet™ to verify that the font is successfully downloaded to the printer.

Font Remap Instructions

1. From the Loftware Label Manager Design Mode, Select **Options** | **Preferences**.
2. Double-click **Intermec** or click the + symbol to open the drop-down list.

3. Click **Remap First Font**.

An example of available options is shown to the right in the Preferences dialog box.

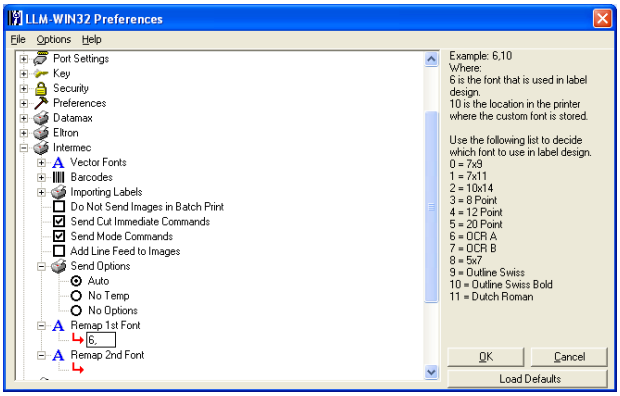


Figure 14.1: Preferences dialog box

4. Type in a number from the list, a comma, and the location in the printer where you want the custom font to be stored.
5. Click **Load Defaults**, choose **OK** or **Cancel**.

Remapped QR Code barcodes allow embedding control characters (Barcodes\PDF417 Substitution\Create QR Symbol Instead of PDF417 setting in the Intermec section of the Preferences dialog). Characters 0x80 to 0x255 used in ASCII formulas are handled properly in the print stream. Low ASCII characters that work for PDF or DataMatrix also work for per field remapped QR Code barcodes.

Intermec IPL Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. Does not let you retry, the label does not print.	Error message. Does let you retry so the label prints.	Error message. Does let you retry so the label prints.	Error message. Does let you retry so the label prints.
COM	Error message. Does let you retry, the label prints.	Error message. Does let you retry, the label prints.	Printer stock error. Does let you retry, the label prints.	Print head error. Does let you retry, the label prints.
Spooled Locally	No Loftware printer error, but has a Windows printer error. Does let you retry, the label prints.	No Loftware printer error, but has a Windows printer error. Does let you retry, the label prints.	No Loftware printer error, but has a Windows printer error. Does let you retry, the label prints.	No Loftware printer error, but has a Windows printer error. Does let you retry, the label prints.
Spooled to Shared	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
Spooled to PrintServer	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.
Direct IP	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.

Intermec Fingerprint/Direct Protocol Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message, no retry; the label is not printed.	Error message, no retry; the label is not printed.	Error message, no retry; the label is not printed.	Error message, no retry; no label is printed.
COM Port	No error message. LLM-WIN behaves as if the labels have printed. Printer turned back on= no labels	No error message. When reconnected, all the labels print.	No error message. When you re-stock, all labels print.	No error message. When you put the print head down, all labels print.
USB	Received 'port not found' error. USB port not shown in Port combo of Printer |Connection	Error Message. Printing starts when cable reconnected.	Error Message. Printing resumes when stock added.	Error Message. Inconsistent results with printing when head is put back down.
Spooled Locally	No Loftware error message, displays Windows error message. Lets you retry; labels print.	No Loftware error message, displays Windows error message. Lets you retry; labels print.	No Loftware error message, displays Windows error message. Lets you retry; labels print.	No Loftware error message, displays Windows error message. Lets you retry; labels print.
Spooled to Shared	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.
Spooled to PrintServer	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.
Direct IP	No error message. All labels print after the printer is turn back on.	No error message. All labels print after the printer is reconnected.	No error message. All labels print after the printer is re-stocked.	No error message. All labels print after the print head is put down.

Meto Information

This printer guide section provides information specific to the Meto family of printers. These printers are created with Datamax language; therefore, see the Datamax section for error messages and other information regarding Meto printers.

Supported Printer Models

Loftware supports the following Meto printer models.

Barcode Label Printers			
mi-4206	mi-6208	mn-4203	ST3210
mi-4212	mi-6308		
mi-4308			

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page. The supported printers include:

Novexx Printers

This section provides information specific to the Novexx family of printers. The Novexx printer family is now part of Avery Dennison. Most of these printers are being manufactured by Avery Dennison using new model numbers. See the Avery Dennison section for information on the Avery Dennison versions of theses printers.

Supported Printer Models

Loftware supports the following Novexx printer models.

Barcode Printers									
ALX 924	Chess 4	Cobra OFL	DPM 4	Lion	Ocelot	Puma	Texxtile	Tiger	Xxtreme
ALX 925	Chess 5	Cobra ONL	DPM 5	Lion Plus		Puma Plus		Tiger XXL	
ALX 926	Chess 6		DPM 6						
	Chess 8								

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Interface Cables (Parallel, Serial, and USB)

These printers usually have a serial interface and a parallel interface. Some models support USB and have NIC Ports.

Interface	Description
Parallel Interface (standard interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Check with manufacturer for cable information. The hardware license key is not part of the serial interface since it must always be plugged into an LPT parallel port.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.
Network Port	Included or optional on some printers.

Novexx Options

Novexx Options may be label-specific or printer-specific.

Novexx Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Label Options Section	
Print Speed	The range of available print speed varies with the selected printer type. This setting controls the speed at which the stock moves when printing. The combinations of print speed and head temperature control the print quality of the label.
Feed Speed	This setting affects the speed at which the paper is fed when advancing over non-printing areas. This setting may affect printer throughput.
Head Temp	This allows you to control the darkness of the print.
Job End Flag Label	When this option is set, the last label printed in a batch is longer than the previous labels, signifying that it is the last label of the batch.
Label Inverse	Inverts the entire label, black prints as white, white space prints as black.

Printer Overrides Section	
Note: These settings override the Print Options Section in Printer Specific Options.	
Print Mode	▪ Batch Mode - The whole surface of the label is printable. ▪ Normal 1:1 Mode - The first 18mm of the label are not printable. The printing on the label is automatically shifted past the empty space. ▪ Real 1:1 Mode - Total surface of the label is printable, and the label is retracted after each label.
Character Set	Several printer languages are available that can print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.
Gap Offset	This command is for determining the beginning of the label when printing labels with irregular gaps.
Cut Interval	Sets the number of labels to be printed before the stock is cut.
Dispense Position	Adjusts the distance the label is fed after printing.

Media Overrides Section	
Note: This section overrides the Printer Specific Options for Gap Offset, Cut Interval, and Dispense Position.	
Gap Offset	This command is for determining the beginning of the label when printing labels with irregular gaps.
Cut Interval	Sets the number of labels to be printed before the stock is cut.
Dispense Position	Adjusts the distance the label is fed after printing.

Printer Overrides Section	
Note: These settings override the Print Options Section in Printer Specific Options.	
Print Mode	▪ Batch Mode - The whole surface of the label is printable. ▪ Normal 1:1 Mode - The first 18mm of the label are not printable. The printing on the label is automatically shifted past the empty space. ▪ Real 1:1 Mode - Total surface of the label is printable, and the label is retracted after each label.
Dispense Position	Adjusts the distance the label is fed after printing.
Character Set	Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Novexx Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

Media Options Section	
Stock Type	■ Die Cut - Stock that has gaps between each label. ■ Continuous - No gaps, notches, or perforations between labels.
Media Type	■ Thermal Transfer (Ribbon) - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath, heating the ribbon material and melting it onto the label. To increase the quality of the print, decrease or increase the speed and increase or decrease the heat as necessary. ■ Direct Thermal (No Ribbon) - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print, decrease/increase the speed and increase/decrease the heat as necessary.
Ribbon Autoeconn	When on, this command turns the ribbon saver "auto economy" feature on in supported printers. Printers that do not support this feature ignore the command. When this feature is turned on, the ribbon usage is economized by lifting when the minimum amount of white space is exceeded.
Gap Offset	This command determines the beginning of the label when printing labels with irregular gaps.
Gap Length	For continuous stock, this setting is used to add space between printed labels. The settings are in increments of 1mm.
Cut Interval	This sets the number of labels to be printed before the stock is cut. This setting may yield unexpected results if you use a value that is not an even multiple of the Quantity and/or Duplicates value. For example: If Quantity = 2, Duplicates = 3, and Cut Interval = 2, your labels may print/cut in the following sequence: Label 1 Duplicate 1 Label 1 Duplicate 2 <CUT> Label 1 Duplicate 3 Label 2 Duplicate 1 <CUT> Label 2 Duplicate 2 Label 2 Duplicate 3 <CUT>

Print Options Section	
Do Not Send Options	When this is checked, Loftware does not send any Printer Specific Options or Label Specific Options to the printer.
Print Mode	The availability of the Print Modes depends on the printer. ■ Batch Mode - The whole surface of the label is printable. ■ Normal 1:1 Mode - The first 18mm of the label are not printable. The printing on the label is automatically shifted past the empty space. ■ Real 1:1 Mode - Total surface of the label is printable, and the label is retracted after each label.

Print Options Section	
Character Set	Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Dispense Options Section	
Dispense Mode	This setting applies only to printers with the dispenser attachment. ■ Disable – The default setting, dispense mode disabled. ■ Batch Mode - The entire label is not printable, the label is not retracted after feeding to the Dispense position. ■ 1:1 Mode - The entire label is printable since the label is retracted before printing the next label.
Dispense Position	Adjusts the distance the label is feed after printing.
Use Single Start function	Only one label is printed at a time. Printing is then suspended until the correct action has been taken. The required action depends on the settings of the printer, and is either the removal of the presented label, or the use of a foot pedal.

Graphics Options Section	
These settings are mutually exclusive; they cannot both be set at the same time.	
Store Images	This setting overrides the normal image behavior and always stores all images.
Images as Binary	All images are sent to the printer in binary format.

Custom Command Section	
The Custom Command option is used when a non-typical printing function is required. Refer to the printer's programming manual for commands that may be used.	
Send to Printer	This instructs the Loftware Label Manager system on when to send the EasyPlug Command.

Note: Commands are printer model and firmware specific. Contact the appropriate printer representative for programming language questions.

Paxar (Monarch) MPCL1 Printers

This printer guide provides information specific to the Paxar (formerly Monarch MPCL1) printers.

Note: Paxar was formerly known as Monarch. Both brands are now owned by Avery Dennison. These printers are listed under the Monarch family in LLM.

Supported Printer Models

Loftware supports the following Paxar (Monarch) printer models.

- 9425
- 9445
- 9474

Supported Printer Family Drivers

Certain Paxar (Monarch) printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Paxar (Monarch) printers.

- ZPLII
- EPL2

Driver Features

Loftware Label Manager takes full advantage of the sophisticated features of the Paxar line of printers. The fixed portions of the label format are stored in the printer's memory to increase printing performance.

In Label Design, when you are test printing, the label format is downloaded every time. However, during Label Printing, the label format is only downloaded the first time. Afterwards, only the variable fields and any new variable images are sent to the printer. If you print the same variable image on two labels in a row, it is stored in the printer for the first label and not downloaded for the second. The image is deleted from the printer's memory if the image field is left blank for a printed label.

When doing a range print, or printing incrementing/decrementing fields, there may be a slight pause between labels while the printer images the new label. When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. If not, all variable data for each label is sent to the printer each time and Loftware Label Manager does all of the incrementing/decrementing.

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Error Messages and Handling

When printing to a Paxar printer or using Printer Status to check the state of a Paxar printer, Loftware Label Manager may report the following error: Printer Returned <error code>

Refer to your printer documentation to reference these error codes.

Example

"Printer returned: DATA ERROR, error 571"

Error 571 means that a UPC or EAN barcode received data whose length is invalid. You should check the length of your data.

Supported Features

Image Support

Images are downloaded and stored in the printer's image memory. Loftware Label Manager remembers images that are sent to the printer and only resends an image if the image is changed.

Printer Control and Configuration

The Loftware Label Manager Design application allows you to configure printer settings that are saved in the label format using File | Media Setup and File | Media Setup | Label Options.

Individual workstation printer settings may be configured using File | Devices from within the Design or any of the Print applications: On Demand, Range.

Many of the settings in the printer do not take effect until the printer is re-booted. All Label-Specific options are sent to the printer every time a label is printed.

Paxar (Monarch) MPCL1 Options

Paxar Options may be label-specific or printer-specific.

Note: Paxar was formerly Monarch.

Paxar MPCL1 Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Paxar MPCL1 Label Options	
Horizontal Copies	The number of copies to print across the supply.

Paxar MPCL1 Label Options	
Cut/Take-Up	▪ Use PSO Cut Option – Uses the Cut/Takeup option selected in the device Options dialog box. Setting the cut option in the Label Options dialog box provides label specific cutting options. Whereas, setting the Cut/Takeup option in the device Options dialog box produces the same behavior for all labels printed on that specific printer. ▪ Cut each label, except last - This option only works with labels 4 to 8 inches in length. ▪ Cut each label, including last - This option only works with labels 4 to 8 inches in length. ▪ No Cut/No Rewind - When enabled, does not allow label to be cut, nor does it rewind after printing.
Format Number	The number of the Monarch Printer Control Language (MPCL) format to use. Refer to your MPCL documentation for more information.

Paxar MPCL1 Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

Label Options Section	
Cut/Takeup	▪ Cut After Entire Batch Only – When enabled, cuts after the last label in the batch has been printed. ▪ No Cut/No Rewind – When enabled, does not allow label to be cut, nor does it rewind after printing. ▪ Cut each label, except last - This option only works with labels 4 to 8 inches in length. ▪ Cut each label, including last - This option only works with labels 4 to 8 inches in length.
Note: There are extensive differences in the cut behavior between Extended and Native Modes with the 98XX Series Printer. Information regarding the expected behaviors for each is found in Loftware's Knowledge Base.	
Label Mode	▪ Separator Off - No separator prints between batch jobs. ▪ Normal Length Separator – A normal length separator with 3mm black stripe prints between batch jobs. ▪ Double Length Separator - A double length separator (typically used for 924 or 925 stacker) prints between batch jobs. On the 920 stacker, a 3mm extra length tag prints between batch jobs. ▪ Extra Length Tag – A 3mm extra length tag with 6mm stripe prints between batches.

Paxar MPCL1 - UPC and EAN Barcodes

Note: Paxar was formerly Monarch.

Using UPC/EAN Extensions

Loftware Label Manager allows you to specify that UPC/EAN barcodes should print with an extension. In addition, PAXAR printers automatically enable UPC/EAN extensions based on the length of the data.

Note: The user must enter an 'extra' character of data when an extension is enabled. This extra'character is ignored by the printer. For example, using UPC-E with the +2 extension, the user must enter 9 characters of data, the first 6 of which are encoded in the barcode and the last 2 are encoded in the extension. The 7th character of data is ignored and replaced with the barcode check digit.

Paxar (Monarch) MPCL2 Printers

Note: Paxar was formerly known as Monarch. Both brands are now owned by Avery Dennison. These printers are listed under the Monarch family in LLM.

This printer guide provides information specific to the Paxar printers. The Paxar/Monarch printers include:

Supported Printer Models

Loftware supports the following Paxar (Monarch) printer models.

Barcode Label printers			
1465	9401/02/05	9805	Monarch 9855 RFID
	9403	9820	Monarch 9855 RFMP
	9412/13E	9825	
	9414E	9830	
	9414M	9835	
	9416	9840	
	9433	9850	
	9446	9855	
	9460	9856	
	9490	9860	
	9494		

Supported Printer Family Drivers

Certain Paxar (Monarch) printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Paxar (Monarch) printers.

- ZPLII
- EPL2

Driver Features

Loftware Label Manager takes full advantage of the sophisticated features of the Paxar/Monarch line of printers. The fixed portions of the label format are stored in the printer's memory to increase printing performance.

In Label Design, when you are test printing, the label format is downloaded every time. However, in Label Printing, the label format is only downloaded the first time. Afterwards, only the variable fields and any new variable images are sent to the printer. If you print the same variable image on two labels in a row, it is stored in the printer for the first label and not downloaded for the second. The image is deleted from the printer's memory if the image field is left blank for a printed label.

When doing a range print or printing incrementing/decrementing fields, there may be a slight pause between labels while the printer images the new label. When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. If not, all variable data for each label is sent to the printer each time and Loftware Label Manager does all of the incrementing / decrementing.

Printer Status (Serial only)

If the printer reports that everything is OK, the level of firmware in the printer is also displayed.

This function can be a valuable tool. If there is a problem communicating with the printer, a corresponding error message is displayed.

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.
Refer to the RFID Devices and Tag Types section for information on tag types supported by the Monarch (Paxar) RFID printer.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.

Interface	Description
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

For all other Paxar printers, use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port.

Error Messages and Handling

When printing to a Paxar printer or using Printer Status to check the state of a Paxar printer, Loftware Label Manager may report the following error:

Printer Returned <error code>

Example

"Printer returned: DATA ERROR, error 571"

Error 571 means that a UPC or EAN barcode received data whose length is invalid. You should check the length of your data.

Related Information

Refer to your printer documentation to reference these error codes.

Supported Features

Image Support

Images are downloaded and stored in the printer's image memory. Loftware Label Manager remembers images that are sent to the printer, and only resends an image if the image is changed.

Supported Fonts

The following are the standard fonts provided in the 9446, 9490, and 9494:

Name	Dots	Features
Reduced	8 by 18	magnify height and width from 1 to 7
Standard	16 by 24	magnify height and width from 1 to 7
OCR-A	16 by 23	magnify height and width from 1 to 7; no lowercase
BOLD	32 by 48	magnify height and width from 1 to 7; no lowercase

On the 9490 and 9494, the following additional fonts are available:

Name	Features
Pointable Vector	height and width values in points from 4 to 90
CG Times	height and width magnification from 1 to 7
CG Times Bold	height and width magnification from 1 to 7

Additional ROM Fonts

Additional ROM Font sets are available for Paxar printers. If an additional ROM set is installed in your printer, select File | Media Setup and choose the appropriate ROM Set in the Additional Installed Fonts list. Afterwards, the font choices for the selected ROM Set become available in Label Design. If after doing this, you try to print and the printer beeps or returns an error, you may have chosen a ROM Set that the printer does not really have.

Printer Control and Configuration

The Loftware Label Manager Design application allows you to configure global printer settings, which are saved in the label format using File | Media Setup and File | Media Setup | Label Options.

Individual workstation printer settings may be configured using File | Devices from within the Design or any of the Print applications: On Demand, Range.

Many of the settings in the printer do not take effect until the printer is re-booted. In the **Printer Options** dialog box, clicking **Send To Printer** sends the currently selected options to the printer. All Label-Specific options are sent to the printer every time a label is printed.

Paxar (Monarch) MPCL2 Options

Paxar MPCL2 Options may be label-specific or printer-specific.

> **Note:** Paxar was formerly Monarch.

Paxar MPCL2 Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Option	Description
Print Speed	The range of available print speeds varies with the selected printer type. This setting controls the speed at which the paper is fed when printing. The combinations of print speed and head temperature control the print quality of the label.
Head Temperature	This allows you to control the darkness of the print. 0 is nominal; setting the temperature higher than 0 causes the label to print darker. Temperature settings lower than 0 cause the label to print lighter. Values from –390 to 156.

Option	Description
Cut Options	■ Use PSO - Uses the cut option selected in the device Options dialog box. Setting the cut option in the Label Options dialog box provides label specific cutting options. Whereas, setting the cut option in the device Options dialog box produces the same behavior for all labels printed on that specific printer. ■ Cutter Off - Disables the cut mechanism on the printer. ■ Cut After Every Tag - Cuts before first tag, cuts each tag and cuts after last tag. ■ Cut After Every Batch -Cuts before first tag, cuts after batch. Cuts in strips, not each tag. ■ Cut After Last Tag in Batch – Cuts before first tag, cuts each tag, cuts after the last tag and feeds one or two tags past the printhead when it cuts the last tag in the last batch. ■ Cut Every Tag and After Batch – Does not cut before the first tag in a batch, but cuts between each tag and after the last tag in the batch. The feed key must be pressed to feed the last tag out far enough to be cut.
Note: When using the cutter with 98x Printers, please review Loftware Knowledge Base Article #2009218 for information regarding different behaviors in Modes, Versions, and Cut Intervals.	
Backfeed Options	■ Use PSO Backfeed - Uses the backfeed option selected in the device Options dialog box. Selecting a Backfeed Options setting in the Label Options dialog box applies label specific backfeeding behavior to each label, that is, all labels printed on that specific printer. ■ Disable Backfeed - No backfeed motion occurs. ■ Enable Backfeed - Backfeed motion occurs after each printed label. This option can be used on any printer without a knife. ■ Extended Backfeed - An extended backfeed motion occurs after each printed label. This option is only valid on the 9835 and 9840 printers.

Paxar MPCL2 Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

Label Options Section	
Ribbon Type	■ Normal Ribbon - The standard ribbon is installed. ■ No Ribbon - Ribbon is not installed. Direct thermal stock is required for this option. ■ High Energy Ribbon - High Energy Ribbon is installed. In this mode, the print head is elevated to a higher temperature and therefore requires a ribbon that withstands high temperatures. A print speed of 2.5 IPS must be used with this ribbon. Peel mode should not be used with High Energy Ribbon. Please consult the Paxar Operator's Handbook for other limitations.
Supply Type	■ Center Aperture Supply - Hole, gap, or other type of opening found in the center of the stock. ■ Continuous - No gaps, notches, or perforations between labels. ■ Die Cut Labels - Stock that has gaps between each label. ■ Mark Stock - Black mark found opposite print side.
Label Mode	■ Continuous operation - Default mode for printing when peel mode is not desired or a rewind motor is not installed. ■ On-demand mode - While in On-Demand mode the next label prints when the previous label is removed or when the feed button is pressed. The pause light blinks until all of the labels in the batch are printed. This option should be used with a peel module. ■ Rewind – This option is peel mode with a rewind motor. The label backing should be properly fed and attached to the take up reel.

Label Options Section	
Cutter Mode	■ Cutter Off - Disables the cut mechanism on the printer. ■ Cut After Every Tag - Cuts before first tag, cuts each tag, and cuts after last tag. ■ Cut After Last Tag in Batch - Cuts before first tag, cuts each tag, cuts after the last tag and feeds one or two tags past the printhead when it cuts the last tag in the last batch. ■ Cut Every Tag and after Batch – Does not cut before the first tag in a batch, but cuts between each tag and after the last tag in the batch. The feed key must be pressed to feed the last tag out far enough to be cut.
Cut Interval	This sets the number of labels to be printed before the stock is cut.

Forms Control Section	
Horizontal Adjust	Horizontal offset (in printer dots) used during printing.
Supply Position	Supply (label) position at beginning of print job (-99 to 99).
Vertical Adjust	Vertical offset (in printer dots) used during printing.
Cut Adjust	Adjusts where the tag is cut. The printer adjusts the cut position according to the black marks on the supply. You may need to adjust for aperture supplies. Increase to move the cut up, decrease to move the cut down.
Slashed Zero	When checked, prints slashes through zeros.
Print Separator	When checked, prints a separator ticket. ■ Single - Prints a single separator ticket (all printers). ■ Double - Prints 2 separator tickets (9835 V5.0 or 9840 V6.0 only)
	Note that Double is disabled in Version 7.0.29 for the 9835, 9840, and 9850 Models.

Forms Control Section	
Old Firmware	Does not send new firmware options if checked. If you are having difficulty communicating with the printer, try selecting this option. By choosing this option, you disable status checking and other commands that are only supported in newer versions of the printer firmware. If using this option allows you to print, you may wish to consider purchasing a printer firmware upgrade. After your printer firmware upgrade is installed, you should uncheck this option.
Only Resend Fields that have changed	When checked, only the data that has been changed is re sent for printing.

Note: The Paxar 9403, 9805, and 9856 printers do not support backfeed.

Backfeed Control Section	
Use Backfeed Control to enable or disable the backfeed option, set the dispense position and the backfeed distance. Backfeed works by advancing each printed label to the desired dispense position. Once that label is removed, the next label to be printed is backed up underneath the printhead. In continuous mode, only the last label in the batch is advanced to the dispense position. You may need to adjust the dispense position to allow labels to be removed, die cut labels to be removed easily, or to prevent them from falling off. The dispense position and backfeed distance are optional parameters and do not have to be specified. However, they allow for greater precision when positioning the supply. You cannot change the backfeed distance while the printer is active.	
Dispense Position	Adjusts the stopping point of the label. 50 to 200 dots (default 65 dots).
Backfeed Distance	Amount to move label backwards. 10 to 200 dots (default 65 dots). Cannot be greater than the dispense position.
Backfeed	Extended Backfeed Disable Backfeed
The backfeed distance should equal the dispense position. An exception is if you are tearing instead of peeling. Then, the backfeed distance must be 30 dots (.150 inches) less than the dispense position. However, the result is a 30 dot non-print zone on your supply.	

Font Style Section	
Opaque	The font and its envelope are opaque and blot out any lines or other fields that it overlaps.
Transparent	The font and its envelope are transparent, and any lines or other fields that it overlaps are visible.

Advanced Options Section	
Language	Selects the language of the country chosen. Defaults to United States.
Symbol Set	Selects the symbol set used for fonts.
Graphic Storage	Choose Flash or Volatile RAM or Non-Volatile RAM. Flash Memory is a special type of EEPROM that can be erased and reprogrammed in blocks instead of one byte at a time. Volatile RAM loses its contents when the power is turned off, whereas Non-volatile RAM retains its contents. The 30-dot difference accounts for improper tearing of butt cut supplies, because you do not want any exposed adhesive under the printhead. For more information, consult your Printer manual.

Note: If the graphic is larger than .5 by .5 inches, the graphic is stored in Temporary Storage in the printer buffer, regardless of the PSO selected. The image is held only until it is sent.

Custom Command Section

The Custom Command option is used when a non-typical function is required when printing. Refer to the printer's programming manual for commands that may be used.

Note: Commands are printer model and firmware specific. Contact the appropriate printer representative for programming language questions.

Paxar MPCL2: More Information

Note: Paxar was formerly Monarch.

Incrementing/Decrementing Fields

When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called Native Mode. In Native Mode, control returns to the computer almost immediately.

Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called Extended Mode. In Extended mode, the Printing dialog box shows the line "Printing Label x of y" and control does not return to the computer until the entire series of labels is printed.

Label Size

The label size is used as a frame of reference. When you rotate your label or when you rotate the printing of a label, it is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

Using UPC/EAN Extensions

Loftware Label Manager allows you to specify that UPC/EAN barcodes print with an extension. In addition, Paxar printers automatically enable UPC/EAN extensions based on the length of the data. The user must enter an 'extra' character of data when an extension is enabled. This 'extra' character is ignored by the printer.

Example

Using UPC-E with the +2 extension, the user must enter 9 characters of data. The first 6 characters are encoded in the barcode and the last 2 are encoded in the extension. The 7th character of data is ignored and replaced with the barcode check digit.

Communications Settings

The communications settings for the Paxar 9490 and 9494 are controlled by software instead of switch settings.

Note: This feature is not supported on the Paxar 9446 printers.

To set the printer's communications parameters, use the Send Settings button in the **Device Connection** dialog box. Setting the printer's communications parameters is only possible immediately after turning on the printer.

To print out the current communication settings of these printers shut the printer off, press the printer feed button, turn the printer on, and immediately release the feed button when the yellow LED light on top of the printer blinks. A label feeds out of the printer showing current settings.

For more information, see the "Configuring the Printer" section of your printer manual.

Creating a Price Field

To format a field as a price field:

Example: $19.68	Define field as variable and preface the name of the field with $$.
Example: $$Price	To have $19.68 printed on the label, supply 1968 as data.

Paxar Error Messages

Note: Paxar was formerly known as Monarch.

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. Does not let you retry, the label does not print.	Error message. Does not let you retry, the label does not print.	No error message. Behaves as if the labels are printing. Press feed to get the first two labels; press feed again.	No error message. Behaves as if the labels are printing. Press feed to get the first two labels; press feed again.

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
COM	Error message comes up when you restart the printer. Allows retry, labels print.	Error message comes up when you reconnect the printer. Allows retry, labels print.	Error message comes up right away. Allows retry, the labels print.	Error message comes up right away. Allows retry, the labels print.
Spooled Locally	No Loftware error message, but a Windows printer error is displayed. All labels print.	No Loftware error message, but a Windows printer error is displayed. All labels print.	No Loftware error message, but a Windows printer error is displayed. All labels print.	No Loftware error message, but a Windows printer error is displayed. All labels print.
Spooled to Shared	No error message. All labels print.	No error message. All labels print.	No error message. Labels print after stock is added.	No error message. Labels print after the print head is put down.
Spooled to PrintServer	No error message. All labels print.	No error message. All labels print.	No error message. Labels print after stock is added.	No error message. Labels print after print head is down.
Direct IP	No error message. All labels print.	No error message. All labels print.	No error message. Labels print after stock is added.	No error message. Labels print after print head is put down.

PCL5 Information

Printer Control Language (PCL) is a printer language created by Hewlett-Packard®. PCL is also used by a number of other printer manufacturers. PCL is listed as a Loftware native driver among the available printers. Loftware's PCL driver operates with any printer that supports PCL5.

The native PCL fonts enabled for PCL5 are Univers, CG Times, Courier, and Arial. Univers is the default font for the driver.

Pass Through Fields

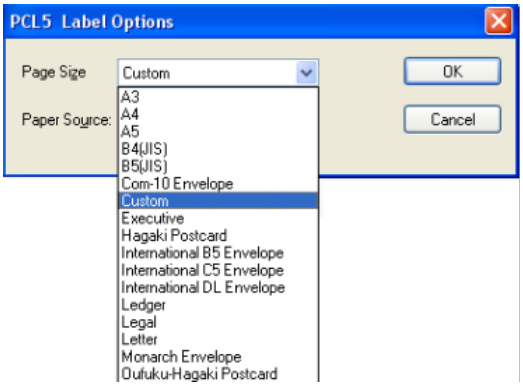
PCL 5 printers using PCL printer language support the use of Pass Through fields. A Pass Through field allows you to fully define a label field with the field's data. You can insert printer language directly into a label field and pass PCL commands through the Loftware native driver directly to your printer. This may give you the ability to include options that may not be supported by Loftware's native driver.

See Pass Through Fields in the Customizing Labels section of this guide for more information and instructions on creating Pass Through fields.

PCL5 Options

PCL5 Label Specific Options

PCL5 Page Size options include: A3, A4, A5, B4(JIS), B5(JIS), Com-10 Envelope, Custom, Executive, Hagaki Postcard, International B5 Envelope, International C5 Envelope, International DL Envelope, Ledger, Legal, Letter, Monarch Envelope, and Oufuku-Hagaki Postcard. Options supported by different PCL5 printer models may vary.



The Custom page size option allows printing on custom paper size page stock to a PCL 5 Printer that supports the custom size.

- A label can be designed with specified dimensions and then printed on a target PCL 5 printer that supports the custom size and has been set up with the custom-sized paper. (These configuration settings are made from the printer's configuration interface (Control Panel).) The label dimensions should correspond to the custom paper size.
- A label can also be configured with a page layout of specified label / page width and height, and then printed on a target PCL 5 printer that supports the custom size and has been set up with the custom-sized paper. The layout dimensions should correspond to the custom paper size.

Paper Source

Because of the variety of PCL5 supported page sizes, this setting allows you to configure the paper source (tray) at the label level. By default, the Paper Source is set to the selection in the printer's PSO (Use Printer Setup), but you can select any of the other options described in the PCL5 Printer Specific Options section below. If a different option is selected and saved in the label format, then that option is used whenever that label is printed, UNLESS a job containing a *TRAY command is submitted through LPS. The *TRAY command overrides both the printer setting and the label setting.

Note: Different manufacturer's printers may implement the handling of the Paper Source selection differently. For example, one manufacturer may map the Lower Tray command to the printer's Lower Tray while another manufacturer may map the same command to its Optional Tray. Additionally, these mappings may be configurable, again depending upon the manufacturer.

When driving printers with PCL5, note that there is typically a ¼" margin on all sides of the page that is not printable. Additionally, along the top of the page, the unprintable margin area can have label elements (text, lines) positioned within it, creating a clipping effect. For this reason, it may be best to define the label or page layout size in Loftware to be ½" (2 x ¼") less than the physical paper size. For example, a label designed for a Letter sized page would be 8" x 10½".

The optimal settings and dimensions for different PCL5 printer models may vary.

PCL5 Printer Specific Options

Printer Options with PCL5 printers are different from most of the other supported printers. The figure displays default options:

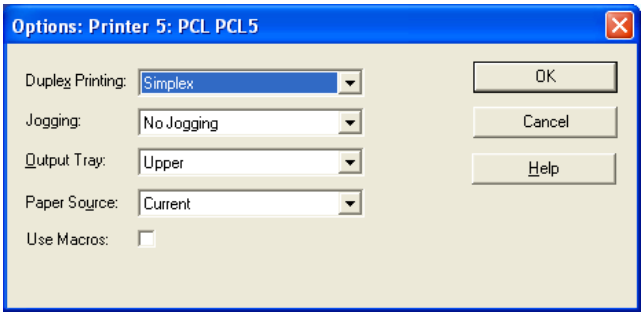


Figure 14.2: PCL5 Printer Options dialog box

Option	Description
Duplex Printing	▪ Simplex – Simplex mode prints images and characters on one side of a sheet / page. ▪ Duplex Long Edge – Prints images and characters on two sides of a sheet/page. Long means that the duplexed pages are bound along the length of the physical page. ▪ Duplex Small Edge - Prints images and characters on two sides of a sheet/page. Short means that the duplexed pages are bound along the width of the physical page.
Jogging	Printers that support this feature provide a means of identifying one print job from others by slightly offsetting the first label of each print job. ▪ First Label in Job – When a print request is initiated, the paper tray is shifted slightly or "jogged" before the first label or page prints. ▪ No Jogging – Jogging is disabled. There is no print job separation even for printers that support this feature.
Output Tray	▪ Upper – The default output bin for paper. ▪ Lower - Prints to the lower output bin. If this command is received by a printer that does not contain the dual-bin feature, it is ignored.

Option	Description
Paper Source	■ Auto – This option feeds paper from a printer-specific tray. ■ Current – Prints the current page from the location last used. ■ Envelope Feeder – This option prints using stock from an optional envelope feeder tray. ■ Envelope Manual – Prints the envelope as manually inserted on the top of the tray. ■ Lower Tray – Prints using stock from the lower tray. ■ Manual – This option allows manual insertion of paper. ■ Optional Source – This allows insertion of stock from an optional location that may exist on a specific printer.
Use Macros	If this is checked, Loftware uses the PCL5 Macro commands to store fixed fields, lines and boxes. Depending on your labels, this may significantly speed printing throughput, especially when there are large fixed images, text, or barcode fields on your label.

PCL5 USB Issues

USB Printing and PCL5

Loftware tested printing to a USB-connected HP LaserJet 1200 series PCL 5+ printer using various Loftware applications such as Design Mode and On-Demand Print. The results are documented in very general terms below. Your results depend on the printer manufacturer and printer you are using and are quite likely to be different.

Loftware Applications are designed to open, write, and then close the USB Printer port when processing a print request. As long as the USB Printer allows this to happen, printing continues without incident. If the printer is not connected or is turned off, the Loftware application cannot open the port; a message is displayed or an error condition is created which states “Error Opening Port (printer name).” If the printer is out of stock and it shuts the USB port down, the Loftware application cannot write to the port. A message is displayed, or an error condition is created stating “Error Writing to Port (printer name).” If the printer is out of stock but the printer has a buffer, an error message may not display until the buffer is full.

USB Printing and the LPS

Various expected behaviors occur when printing to the LPS using a USB Printer with error conditions, such as Paper Out. After the printer buffer is full, jobs stay in pending folder. After about 2 minutes, the Status displays media problem or “Error writing to/opening port (Printer Name)” message. After correcting the error condition, the jobs in the buffer print out, and the pending job completes.

It is important to read all available printer manufacturer information on USB Printing with your printer before attempting to print using Loftware applications. Remember to install any USB Drivers before connecting, configuring or printing in Loftware.

Retail Systems International, Inc. (Pressiza) Printers

This section provides information specific to Pressiza printers.

Please refer to the appropriate printer section for the printer specific options, error messages, and other information.

Supported Printer Models

Loftware supports the following Retail Systems International, Inc. (Pressiza) printer models.

Datamax (OEM)	Avery/Novexx (OEM)
406+	512-64
406-400+	408
F-422	412-64
F-428	610-64
F-438	808-64
F-446	TX408
F-464	XT-10

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.

Printronix Information

This printer guide provides information specific to the Printronix printers, and IBM OEM Printronix printers. See the InfoPrint Solutions (formerly IBM) Section for a list of IBM printers.

Supported Printer Models

Loftware supports the following Printronix printer models.

Barcode Label Printers							
L1024	LPA8204r	P5005B	SL4M	SLPA5204r	SLPA5204r RFID	T4M	T4M RFID
L1524	LPA8304r	P5010	SL5204	SLPA5304r	SLPA5304r RFID	T5204	T5204 RFID
L5020	LPA8204r RFID	P5205B	SL5304	SLPA7204e	SLPA7204e RFID	T5204r	T5204r RFID
L5031	LPA8304r RFID	P5215	SL5304r	SLPA7304e	SLPA7304e RFID	T5206	T5206r RFID
L5035		P5210	SL5204r	SLPA8204r	SLPA8204r RFID	T5206r	T5208r RFID

Barcode Label Printers							
L5520		P5220	SL4M RFID	SLPA8304r	SLPA8304r RFID	T5208	
L5535			SL5204 RFID			T5208r	
			SL5304 RFID			T5304	T5304 RFID
			SL5304r RFID			T5304r	T5304r RFID
			SL5204r RFID			T5306	
			SL5306r RFID			T5306r	T5306r RFID
						T5308	
						T5308r	T5308r RFID

Supported Printer Family Drivers

Certain Printronix printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Printronix printers.

- ZPLII (ZGL)
- IPL (IGL)

Related Information
To view updated Printronix information, go to Loftware's Web site, www.loftware.com. See the section on Printers on the Technical Support page.
Refer to the RFID Devices and Tag Types section for information on tag types supported by the Printronix RFID printers.

Printer Status

This function can be a very valuable tool when printers are connected using the Serial Interface. If there is a problem communicating with the printer, an error message is displayed. By default, Printer Status is disabled for Printronix printers. To enable Printer Status, you must first enable One Char Enquiry on the printer via the menu controls, and then uncheck the **Disable Status Checking** check box in the **Device Connection** dialog box in Loftware.

Interface Cables (Parallel, Serial and USB)

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Printronix Options

Printronix Options may be label-specific or printer-specific.

Printronix Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties dialog** (F5).

Label Options Section	
Print Speed (IPS)	The range of available print speeds in inches per second (IPS) varies with the selected printer type. Note that the printer may use a slower print speed than you specify in order to maintain print quality.
Slew Rate (IPS)	This setting affects the speed in inches per second (IPS) at which the paper is fed when advancing over non-printing areas. This setting may affect printer throughput.
Darkness	This allows you to control the darkness of the print. -3 is nominal; setting the temperature higher than -3 causes the label to print darker. Temperature settings lower than -3 cause the label to print lighter. The valid values range from -15 to 15.
Format Number	Specifies the areas of RAM in which the label format is to be stored. The valid values are 1-100.
Print Quality	This setting only applies to the P5000 Series line matrix printers and is somewhat similar to the darkness control on the thermal transfer printers. ▪ Best - prints the darkest images, but at the slowest speed. ▪ High - prints at a faster speed than Best, but the characters are not as dark. ▪ Data Processing - This mode should be set if the highest speed is desired, printing is not as dark as High.

Label Overrides Section	
Symbol Set	■ Use Printer Symbol Set – Label uses settings from Printer Specific Options. ■ User Defined – Label uses an added CodePage. ■ Other Symbol Sets (Arabic to Turkish)
Send Options	■ Use Printer Setup - Label uses settings from Printer Specific Options (PSO). ■ No – Overrides any Send Options set in PSO, nothing set. ■ Yes – Overrides Do Not Send Option in PSO
Cutter	Enables cutter for this label only.
Cut Interval	Sets Cut Interval for this label only.

Printronix RFID Options Section	
Use Label or Printer Options	This allows you to use either the Label Specific Options settings or those set in Printer Specific Options (PSO).
Single Protocol Firmware	Changes in firmware affect the commands that the printer accepts. Check this box if your firmware is single protocol.
Send Options to Printer	This will use the currently selected options.
Tag Type	Auto Detect determines the tag type. Select **No Tags** if none is available.
Passcode Write Retries	Number of passcode write retries.

Printronix Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

Since none of the printer options are sent from Loftware, the Printer must be properly configured through its front panel for this to work. Be sure to enable HOST FORM LENGTH on the printer.

Media Options Section	
Stock Type (Gap Sense)	▪ This option specifies the method used to detect the media top. ▪ Advanced Gap Stock -Media being used has liner gaps between die cut labels with black background. ▪ Advanced Notch Stock – Media being used has notches or holes that interrupt a black vertical line on the underside of the media. ▪ Continuous Stock - Continuous media with no black stripe and no gap is being used. ▪ Die Cut Stock - Media with a space or "gap" between die cut labels is being used, where the media backing or liner is present between labels. Also for media with pre-punched notches or holes. ▪ Mark Stock - Media with a horizontal black stripe on the backside of the liner is being used.
Media Type (Print Mode)	▪ Direct - Direct Thermal type of printing (no ribbon) requires special heat sensitive media. ▪ Transfer - Thermal Transfer type of printing (ribbon installed).
Media Handling	This option specifies how the printer handles the media. ▪ Continuous operation - Printer prints on the media and sends it out the front. ▪ Cut Each Label - Media is cut after printing each page (requires optional cutter). ▪ Peel-Off - Prints and peels die-cut labels from the liner without assistance. The printer waits for you to take away the label before printing the next one. The label backing is rewound on the internal rewinder. A "LABEL PRESENT/Remove Label" message reminds you to remove the label before the next one can be printed. ▪ Tear-Off - After each label is printed, the printer positions the label over the tear-off bar and waits for you to tear-off the label before printing the next one. A "LABEL PRESENT/Remove Label" message reminds you to remove the label before the next one can be printed. ▪ Tear-Off Strip - Printer prints on the media and sends it out the front until the print buffer is empty, then positions the last label over the tear-off bar for removal.

Forms Control Section	
Cut Interval	Sets the printer to cut after the specified number of pages (requires optional cutter).

Forms Control Section	
Tear Off Pause Count	Sets the printer to pause after the specified number of pages. The paper must be completely torn before the printer resumes normal operation.
Offline Pause Count	Sets the printer to pause (offline) after the specified number of physical pages printed.
Send Cut Command	Include the cut command in the print stream.
Auto Eject Labels	Specifies whether the printer ejects the last page of a job if the page is not full. When this setting is checked, the printer ejects the last page after the entire job has been processed and printed. By default, this setting is deselected; the printer does not eject the last page unless you send a Page Eject command or until the printer receives another print job.
Form Feed at Top of Form	Specifies whether the printer performs a Form Feed when a Form Feed command is received and the printer is already at the Top of Form. When this setting is checked, the printer advances media from the present Top of Form position to the next Top of Form position upon receipt of a Form Feed command, causing a blank form. The factory default is Enable. When this setting is deselected, the printer does not advance media from the present Top of Form position to the next Top of Form position upon receipt of a Form Feed command.
Host Form Length	Determines how the physical label size is affected upon an EXECUTE command.
The physical label length changes to match the form length (defined in CREATE mode). The physical label size remains at the new setting until another EXECUTE command is received, or the PRINTER CONTROL menu settings are changed. The factory default is Enable. Forms printed in EXECUTE mode do not change the physical label size. Therefore, the size of the form (defined in CREATE mode) must fit within the current label dimensions, or errors may occur.	

Note: Changing the form length via the EXECUTE command changes the ASCII Emulation logical dimensions.

Field Options Section	
Print UPC Descenders	This parameter allows you to print barcode descenders when human readable data is not present in the UPC/EAN barcodes ■ Always - UPC/EAN barcodes are printed with descenders, even if there is no human readable data. ■ With HR Enabled - UPC/EAN barcodes are printed with descenders only when the Human Readable text field is enabled.
Force Uppercase	When checked, any lower case data supplied for text fields are converted to uppercase. When unchecked, lower case data supplied for text fields print in lowercase.
Slashed Zeros	This option applies to all character sets except OCR A and OCR B. When checked, zeros are printed with a slash. When unchecked, zeros are printed without a slash.

Advanced Options Section	
Symbol Set	Accesses one of the printer's internal multinational or international character sets.
Error Report	This option sets the error reporting capability of the printer. ■ Debug - Puts the printer in debug mode whenever a label format is defined. Each line of the format is printed along with any printer language errors. ■ Fault – If a printer language error occurs, the error is printed on the media, the message "IGP Error" is displayed on the front panel, and then the printer goes offline. The error must be cleared before the printer can resume normal operation. ■ Off – The printer does no physical boundary checking whatsoever. Fields are clipped if they are beyond the page boundaries. ■ On - Full physical boundary checking is performed. Any field that falls off the current page is reported as an error.
Double-byte Symbol Set	This option allows you to choose a variety of Double-byte symbol sets, if your printer has the capability.

Advanced Options Section	
PPM/PMU	▪ PPM = Printronix Printer Manager – Printronix version, only works with Printronix printers ▪ PMU = Print Manager Utility – IBM version, only works with IBM printers The PPM/PMU is a program that provides status and control of multiple printers of the associated type on a network. To use this Loftware feature, enter the IP Address of the computer where the PPM/PMU is running, and click the Browse button. This feature assumes you have a browser on your system and that the PPM/PMU is running on the computer whose IP Address is displayed. If you are successful, a login screen is displayed where you can enter your credentials and configure the system. Refer to your Printronix Manual for information on the actual workings of the PPM/PMU. The IP Address is persistent across all IBM/Printronix printers; each time you enter any IBM / Printronix PSO dialog, the display reflects whatever was typed in that box the last time the IBM/Printronix PSO dialog was closed.
Don't Send Options	When this is checked, Loftware does not send any PSOs or LSOs to the printer. This is useful if you have an older printer or a printer with an older emulation that does not support one or more of the current commands that Loftware sends.

Custom Command Section	
Custom Command	The Custom Command field allows you to add additional commands to the data stream that is sent to the printer. Please consult your IGP/PGL manual for custom command syntax.
Send to Printer	Click to send custom commands to the printer.

Note: The custom command is sent after the ~CONFIG command and before the ~CREATE command.

Printronix RFID Options Section	
Use Label or Printer Options	This allows you to use either the Label Specific Options settings or those set in Printer Specific Options (PSO).
Single Protocol Firmware	Changes in firmware affect the commands that the printer accepts. Check this box if your firmware is single protocol.
Send Options to Printer	This will use the currently selected options.
Tag Type	Auto Detect determines the tag type. Select **No Tags** if none is available.
Passcode Write Retries	Number of passcode write retries.

Printronix Error Messages

	Printer turned Off	Cable disconnected	No stock	Print Head up
LPT	Error message: "Printer not Initialized" No retry allowed	Error Message. Lets you retry to Print label.	Error Message. Lets you retry so you can print label.	Error Message lets you retry so you can print Label.
COM	Error Message. Lets you retry, label prints.	Error Message. Lets you retry, label prints.	Error Message. Lets you retry, label prints.	Error Message. Lets you retry, label prints.
Spooled Locally	Windows error message: "Device not connected" Allows retry, reprints when error corrected.	Windows error message: "Device not connected" Allows retry, reprints when error corrected.	Windows error Message. Allows retry, reprints when error corrected.	Windows error Message. Allows retry, reprints when error corrected.
Spooled To Shared	No error message. Labels print when error is corrected.	No error Message. Labels print when error is corrected.	No Error Message. Label Prints when error is Corrected.	No error Message. Label Prints when error is corrected
Spooled to PrintServer	No Error Message. The labels print when error is corrected	No Error Message. The labels print when error is corrected	No Error Message. The labels print when error is corrected	No Error Message. The labels print when error is corrected
Direct IP	No error message. The labels when the error is corrected.	No error message. The labels when the error is corrected.	No error message. The labels when the error is corrected.	No error message. The labels when the error is corrected.

QuickLabel Information

Supported Printer Models

Loftware supports the following QuickLabel printer models.

- Pronto 442
- Pronto 472
- Pronto 474
- Pronto 843

Related Information
QuickLabel printers use the same language as Datamax Printers; therefore, pertinent information regarding printer options, label options, and error messages may be found in the Datamax section in this section.

SATO Information

This section of the printer guide provides information specific to the SATO family of printers. RFID Printers are italicized in shaded cells.

Supported Printer Models

Loftware Supports the following Sato printer models.

Barcode Printers							
CL408	CT400	CX200	GT408e	M10e	M5900	M84 Pro 203, 305, 609 dpi	XL400
CL408e	CT410	CX208			M5900E	M8400	XL400e
CL412		CX212			M5900RV	M8400RV	XL410
CL412e		CX400			M5900RVe	M8400RVe	XL410e
CL608						M8400S	
CL608e						M8450	
CL612						M8459S	
CL612e						M8459Se	
CL408e RFID						M8460S	
CL412e RFID						M8460Se	
						M8480S	
						M8485S	
						M8485Se	
						M8490S	
						M8490Se	
						M8485Se RFID	

Supported Printer Family Drivers

Certain Sato printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Sato printers.

- ZPLII (ZGL)
- IPL (IGL)

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.
Refer to the RFID Devices and Tag Types section for information on tag types supported by the SATO RFID printers.

Printer Status

If the printer reports that everything is OK, the level of firmware in the printer is displayed. This function can be a useful. If there is a problem communicating with the printer, a corresponding error message is displayed.

SATO Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Note: Make sure that the printer is powered off any time you plug in or remove a parallel cable from a SATO printer. This prevents Parallel ports from malfunctioning.

SATO Options

SATO Options may be label-specific or printer-specific.

SATO Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Label Options Section	
Print Speed	The range of available print speeds varies with the selected printer type.
Print Darkness	Allows you to control the darkness of the print. 1 is the nominal setting.

Label Cut Options Section	
Cut Option	Use Printer Cut Options Use label Cut Options
Cut Interval	This determines how frequently labels are cut.

Custom Command Section	
Allows commands not available in LLM to be sent to the printer.	
Send Command	This command instructs Loftware Label Manager when to send the custom command.

SATO Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

Settings are in dots. Use the dots per inch (dpi) for your printer to find the proper value. For example, if your printer has 203 dpi and you want to set a skip distance of 1 inch, specify a value of 203 for the skip distance.

Label Options Section	
Stock Type	■ Continuous - No gaps or separations between labels. ■ Die Cut - Gap or separation between each label. ■ Mark Stock - Black line or mark on the label stock backing. ■ Tag Stock - Notch in corner of stock.
Character Set	Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.
Print Length	■ 7 Inches sets the printer to the standard print length. ■ 14 Inches sets the printer to the expanded print length (not available for some models).
Note: The M-84XX printers have two choices for maximum label length: 7" (187mm) or 14" (356mm). When using the 8450 printer at 300 dpi, the printer has a maximum print length of 7" and it ignores this setting.	
Expanded Memory	Expanded memory requires the use of a PCMCIA card. Using a PCMCIA card does not add on to existing memory, it replaces it. You must also select the Memory Slot in which the card is located. The length of the label that can be printed varies by printer and resolution. Consult a SATO Technical Reference Manual (not available for some models).

Label Options Section	
Memory Slot	Selects the Memory Card slot. ■ None - No memory card is installed. ■ Slot A - Memory card is installed in location A or 1 in the printer. ■ Slot B - Memory card is installed in location B or 2 in the printer.
Send Options	When enabled, all label and printer options set are sent to the printer. Disable this option to retain the settings set at your printer.

Note: Some printers refer to slot 1 instead of A; A = 1 and B = 2.

Cutter Options Section	
Print/Cut Offset	This is useful for aligning labels to the cut position.
Cut Interval	This determines how frequently labels are cut – a cut interval of 2 cuts every two labels, a cut interval of 1 cut every label.

Base Reference Point Section	
The base reference point is the Horizontal and Vertical setting on the label where fields (lines, text, barcodes and graphics) may start printing.	
Horizontal	Specifies a field's location in the X direction from the current base reference point measured in number of dots at 0 degree orientation.
Vertical	Specifies a field's location in the Y direction from the current base reference point measured in number of dots at 0 degree orientation.

Applicator Options Section	
Opposite Hand Printer	SATO manufactures two applicator engines, a Standard Hand Model and an Opposite Hand Model, identified by looking on the identification tag of the printer or by looking directly at the front of the printer. If the label stock width is less than the print head width and the stock is right justified, this is a Standard Hand Model. An Opposite Hand Model is oriented at lower left as are many of the SATO tabletop printers.

Custom Command Section
Allows commands not available in LLM to be sent to the printer.

Custom Command Section	
Start, End, and Escape commands (STX, ETX, and ESC) are not required at the start and end of the commands. **Example** For a base reference point of 10 Horizontal and 10 Vertical, you would only enter the following command: `A3H010V001` Press the Send To Printer button to issue command to the printer.	
Custom Firmware	SATO manufactures two applicator engines, a Standard Hand Model and an Opposite Hand Model, identified by looking on the identification tag of the printer or by looking directly at the front of the printer. If the label stock width is less than the print head width and the stock is right justified, this is a Standard Hand Model. An Opposite Hand Model is oriented at lower left as are many of the SATO tabletop printers.

Serial Communications Section	
Bi-Com Mode	To enable Printer Status capabilities, this box must be checked and the proper dip switch must be set on the printer.
Get Printer Status Button	Establishes if printer is communicating with the software. Use File | Devices | Connection to make sure settings are correct.
Send to Printer Button	When using Custom Commands, press this button to send them to the printer.

SATO RFID Options	
Use Old RFID Command	When selected, the old read and write commands for the printer are used.
Tag Type	Select from: EPC Class 0 +, EPC Class 1, EPC 1.19, EPC Class 1 Gen 2.
Number of Retries Per label	This setting determines the number of times to retry writing to the label in case of initial failure.
Transponder Position	This is the distance of the chip from the leading edge. This defaults to 26 mm.

SATO - Fonts and Images Information

Sample of Supported Fonts

The following list represents only a small portion of the fonts available for SATO Printers. Consult SATO's manual or their web site for further information.

Font Name	Font Type
* 5x9	Dot Font
* 8x15	Dot Font
* 13x20	Dot Font
* OCR-A	Dot Font
* OCR-B	Dot Font
* 18x30	Smooth Dot Font
* 28x52	Smooth Dot Font
* Vector Font	Vector / Scalable Font

Dot Fonts can be magnified up to 9X horizontally and 9X vertically. The Vector font can be scaled to any size between .05" to 4.88" high.

Printer Capabilities and Limits	
Maximum Number of Fields	These printers have no set limit on the number of fields a label may have. However, the size of the entire print job, (excluding image or graphic data), cannot exceed the size of the printer's receive buffer of approximately 8k.

If the printer reports a receive buffer overflow, you have to reduce the number of fields on the label. The best way to assure that your label does not exceed the printer's buffer size is to do test printing while you are designing the label. When you test print, variable data fields are printed at their maximum length. If you are able to test print a label, it should to fit in the printer's receive buffer.

If your label becomes too large to print, you must reduce the number of fields on the label.

Model	Min Print Length	Max Print Length
8400 200 dpi	0.25"	14.0"
8400 150 dpi	0.25"	14.0"
8450 300 dpi	0.25"	7.0"
8450 150 dpi	0.25"	14.0"
8450 100 dpi	0.25"	14.0"

Image Fields Size Limitations

Up to ten images or logos can be used on a label. The maximum image sizes that the printer can handle are shown below. The actual size of the images that your printer can handle may be smaller depending on the available memory in the printer.

Model	Maximum Image Size in Pixels
8400 200 dpi	832 x 832
8400 150 dpi	768 x 768
8450 300 dpi	1536 x 1536
8450 150 dpi	768 x 768
8450 100 dpi	512x512

Performance Considerations	
Vector Fonts (also called "Scaleable" Fonts)	The LLM supports all of the Proportional Vector fonts available on the SATO M-84XX printers. These fonts can be scaled to any size between .05" to 4.88". The quality of these fonts is excellent; however, vector fonts must be "imaged" in the printer before the label is printed, and that process can slow down printing times. It is not uncommon for a label with several sizes of vector fonts to encounter a 3 to 15 second delay per label. Obviously, there is a trade off between font quality and print speed. In addition, Proportional Fonts may not center properly.
Images	When an image is downloaded to the printer, any white space surrounding the actual image is also downloaded to the printer. This wastes printer RAM and increases the amount of time required to download the image. Always crop your images as tightly as possible.

SATO Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. Does not let you retry, the label does not print.	Error message. Lets you retry, the label does not print.	Error message. Does not let you retry, the label does not print.	Error message. Does not let you retry, the label does not print.

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
COM	Error message after the printer is turned back on. Lets you retry, the label prints.	Error message after the cable is re-connected. Lets you retry, the label prints.	No error message. Once stock is added, all labels print.	No error message. Once the print head is put down all labels print.
Spooled Locally	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.
Spooled to Shared	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.
Spooled to PrintServer	No Loftware error message, a Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message, but a Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message, but a Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message, but a Windows error message is displayed. Lets you retry, the label prints.
Direct IP	No error message. All labels print after the printer is turn back on.	No error message. All labels print after the printer is reconnected.	No error message. All labels print after the printer is re-stocked.	No error message. All labels print after the print head is put down.

Toshiba TEC Printers

This section provides information specific to the Toshiba TEC family of printers.

Supported Printer Models

Loftware supports the following Toshiba TEC printer models.

Barcode Label Printers					
B-372	B-419	B-572	B-852	B-SX4	B-SA4T
	B-431	B-672	B-858	B-SX5	B-SP2D
	B-452	B-682	B-872		B- SV4
	B-472		B-882		B-SX6T

Barcode Label Printers					
	B-482				B-SX8T
	B-492				

Loftware supports the following Toshiba TEC RFID printer models.

RFID Tag Printers
B-SX4 RFID
B-SX5 RFID

Related Information
Updated printer information is available on Loftware's Web site, www.loftware.com. See Printers on the Technical Support page. See also the Toshiba section for supported Toshiba printers.
Refer to the RFID Devices and Tag Types section for information on tag types supported by the Toshiba TEC RFID printers.

Connections

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (standard interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Check with manufacturer for cable information. The hardware license key is not part of the serial interface since it must always be plugged into an LPT parallel port.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.
Network Port	Included or optional on some printers.

TEC Options

TEC Options may be label-specific or printer-specific.

TEC Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Label Options Section	
Print Speed	The range of available print speeds in inches per second (IPS) varies with the selected printer type. **Note:** The printer may use a slower print speed than you specify in order to maintain print quality. **Note:** The actual maximum value supported by the printer varies among different models & different print speeds. Consult your printer manual for further information.
Print Density	Adjusts the print density, on some printers, this is known as darkness, or head temperature. The valid range is from 10 to 10. When the value exceeds the range, the printer automatically corrects it to the maximum value.
Tag Rotation	▪ Bottom First – The bottom edge of the label is the leading edge as it is fed out of the printer. ▪ Top First– The top edge of the label is the leading edge as it is fed out of the printer. ▪ Bottom First Mirrored – The bottom edge of the label is the leading edge as it is fed out of the printer, the entire label is printed as a mirror image. ▪ Top First Mirrored – The top edge of the label is the leading edge as it is fed out of the printer, the entire label is printed as a mirror image.

Label Overrides Section
Media Options, Issue Settings, Backfeed Settings, and Fine Position Adjustments each have label overrides. This means that the Label Options settings are used instead of the Printer Options.

Media Options Section	
Gap Length	When die cut stock is used, this specifies the size (in .1mm) of the gap between each label.
Override Printer Setup	If this is checked, the Gap Length value is used; otherwise, the Printer Options setting is used.

Issue Settings Section	
Issue Mode	▪ Batch Mode - Normal printing mode; labels are continuously printed and fed out of the printer. ▪ Strip Mode - While in strip mode, the printer presents each label and waits for it to be removed before continuing. The printer does not print labels if there is a label at the strip sensor. ▪ Use Printer Setup – Use the setting from the device Options dialog box. ▪ Applicator Mode – Similar to strip mode except that the printing of each subsequent label is controlled by a pause signal from an expansion I/O device (typically an applicator) rather than the strip sensor.
Cutter	Batch Mode must be selected and the optional cutter is required. ▪ After Every Job – Cutting occurs after all labels from each print request are done printing. ▪ After Every Label – Cutting occurs after every label that prints. ▪ Disabled – No cutting occurs ▪ Use Cut Interval – Uses the value that is selected in the Cut Interval.

Issue Settings Section	
Note: When using the LPS, note that each occurrence of a *PrintLabel command constitutes a print request.	
Cut Interval	Designates the number of pieces to be printed before the label is cut. The range is 000 to 100 (no cutting occurs when set at 000)

The Cut Interval setting may yield unexpected results if you use a value that is not an even multiple of the Quantity and/or Duplicates value.

For example

If Quantity = 2, Duplicates = 3, and CutInterval = 2, your labels may print/cut in the following sequence:

Label 1 Duplicate 1

Label 1 Duplicate 2
<CUT>

Label 1 Duplicate 3
<CUT>

Label 2 Duplicate 1

Label 2 Duplicate 2
<CUT>

Label 2 Duplicate 3
<CUT>

Backfeed Settings Section	
Backfeed	■ Don't Send Backfeed – No backfeed commands are sent to the printer. ■ Send Backfeed - Before printing the first label in a print request the printer backfeeds the specified distance (in .1mm) and after printing the last label it forward feeds the same distance. Use this setting to present the label for manual tear off after printing. This setting is not used when printing multi-up layouts. ■ Use Printer Setup - Use the setting from the device Options dialog box. ■ Distance - All measurements are in tenths of a millimeter.

Note: When using the LPS, note that each occurrence of a *PrintLabel command constitutes a print request.

Fine Position Adjustments Section	
Don't Send Settings	No Fine Position Adjust commands are sent to the printer.
Send Settings	Use this setting for making fine adjustments(in .1mm increments) in the Feed Distance, Cutting or Stripping Position, or Backfeed Distance. Consult your printer manual for further information on setting these values

Fine Position Adjustments Section	
Use Printer Setup	Use the setting from the device Options dialog box.
Feed	Range is set between –500 to +500 mm.
Cut/Strip	Range is between from –500 to +500 mm.
Backfeed	Range is between from –99 to +99 mm.

Graphics Method Section	
Use Printer Setup	This is the default setting and applies the setting selected in the Printer Setup dialog.
Overwrite Drawing example	
OR Drawing example	

Custom Command Section	
Command	You may enter a custom TPCL command string here. You must include the command prefix and terminators ("{" and "|}").
This command is sent when printing a label and when clicking **Send To Printer**. It is sent immediately prior to the buffer clear command.	

RFID Option Section	
Override Printer Setup	When checked, the Tag Position setting on this dialog will be used, overriding the selection made from the Printer Specific Options dialog.
Tag Position	This sets the feed amount to adjust the RFID tag position before data is written to it. Tag Position can be adjusted in units of 0.1 mm. Feed direction: + : forward, - : backward

TEC Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

Media Options Section	
Stock Type	■ Continuous Stock - Continuous media with no black stripe and no gap. ■ Die Cut Stock - The label-to-label gap is automatically sensed by the transmissive sensor and the paper position is finely adjusted for every piece. ■ Mark Stock – The black mark provided on the back side of the stock is automatically sensed by the reflective sensor and the paper position is finely adjusted for every piece. (See the Threshold Set command for more information.) ■ Mark Stock on Print Side - The black mark provided on the print side of the stock is automatically sensed by the upper reflective sensor and the paper position is finely adjusted for every piece. ■ Preprinted Die Cut Stock - The label-to-label gap is automatically sensed by the transmissive sensor and the paper position is finely adjusted for every piece according to the value set by the threshold setting (Consult your printer manual for further information on setting the threshold). ■ Punched Hole Stock - The marginal punched holes (round holes) on the fanfold paper are automatically sensed by the lower reflective sensor. Several round holes are automatically sensed according to the specified length of label, and the paper position is finely adjusted for every piece.
Media Type	■ Direct Thermal - Direct Thermal type of printing (no ribbon), requires special heat sensitive media. ■ Thermal Transfer - Thermal Transfer type of printing (ribbon installed).
Gap Length	When die cut stock is used, this is the size (in .1mm) of the gap between each label.
Threshold Set	When Mark Stock is used, the black mark provided on the back of the stock is automatically sensed by the reflective sensor and the paper position is finely adjusted for every piece, according to the value set by the threshold setting. (Consult your printer manual for further information on setting the threshold.)
Ribbon Saver	When checked, if there is a non-print area (in the feed direction) of 20 mm or more in the batch mode, cut mode, or strip mode, ribbon saving is performed automatically.

Note: On some printers, the required non-print area is different; consult your printer manual for more information.

Issue Settings Section	
Issue Mode	■ Batch Mode - Normal printing mode; labels are continuously printed and fed out of the printer. ■ Strip Mode - While in strip mode, the printer presents each label and waits for it to be removed before continuing. The printer does not print labels if there is a label at the strip sensor. ■ Applicator Mode – Similar to Strip Mode except that the printing of each subsequent label is controlled by a pause signal from an expansion I/O device (typically an applicator) rather than the strip sensor.
Cutter	Batch Mode must be selected and the optional cutter is required. ■ After Every Job – Cutting occurs after all labels from each print request are done printing. ■ After Every Label – Cutting occurs after every label that prints. ■ Disabled – No cutting occurs. ■ Use Cut Interval – Uses the value that is selected in the Cut Interval.

Issue Settings Section	
Cut Interval	This designates the number of pieces to be printed before the label is cut. The range is 000 to 100 (no cutting occurs when set at 000). This setting may yield unexpected results if you use a value that is not an even multiple of the Quantity and/or Duplicates value. **For example** If Quantity = 2, Duplicates = 3, and CutInterval = 2, your labels may print/cut in the following sequence: Label 1 Duplicate 1 Label 1 Duplicate 2 <CUT> Label 1 Duplicate 3 <CUT> Label 2 Duplicate 1 Label 2 Duplicate 2 <CUT> Label 2 Duplicate 3 <CUT>
Backfeed	When this check box is enabled, printer backfeeds the stock prior to the printing of the next label a specified distance from 30 to 2000 dpi.

Note: When using the LPS, note that each occurrence of a *PrintLabel command constitutes a print request.

Note: All measurements are in tenths of a millimeter.

Fine Position Adjustments Section	
Enable	When checked, the adjustments listed below become active, and can be set.
Feed	Range is set between –500 to +500 mm.
Cut/Strip	Range is between from –500 to +500 mm.
Backfeed	Range is between from –99 to +99 mm.

Graphics Method Section	
OR Drawing Overwrite Drawing	Overwrite Drawing is the default PSO setting. Graphic data is drawn, overwriting data in the image buffer.

Custom Command Section	
Command	You may enter a custom TPCL command string here. You must include the command prefix and terminators (“{“ and “|}”).

Custom Command Section	
This command is sent when printing a label and when clicking **Send To Printer**. It is sent immediately prior to the buffer clear command.	
RFID Option Section	
Tag Position	This sets the feed amount to adjust the RFID tag position before data is written to it. Tag Position can be adjusted in units of 0.1 mm. Feed direction: + : forward - : backward

Supported Features and Limitations

Toshiba-TEC Incrementing/Decrementing Fields - When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called Native Mode. When printing in Native Mode, control returns to the computer almost immediately.

Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called Extended Mode.

In Extended mode, the Printing dialog box shows the line "Printing Label x of y" and control does not return to the computer until the entire series of labels is printed.

Number of variable fields

There are limits to the number of variable Outline Font, Bitmapped Font and Barcode fields that be printed on a single label.

Variable Field	Field Limit
Variable Outline Font fields	99
Variable Bitmapped Font fields	199
Variable Barcode fields	31

Image Support

Images are downloaded and stored in the printer's image memory. Loftware Label Manager remembers images that are sent to the printer and only resends an image if the image is changed.

Codabar and other Barcode Symbologies

Loftware has created barcode remaps that are built in to our supported Toshiba-TEC Printers. These are implemented through the use of reserved field names. Here is how it works. Add a barcode to a label designed for a Toshiba-TEC Printer. Look at the table below, and in the **Properties** Box, choose a symbology from the left column, then start the field name of the barcode with one of the reserved remap names in the right-hand column.

Properties Box Symbol	Reserved Remap Name
Code93	CODABAR

Properties Box Symbol	Reserved Remap Name
DataMatrix	QRCODE
PostNet	ROYALMAIL
PostNet	KIX

Start/Stop Codes

The default Start/Stop Codes for Codabar are "A" and "D." To change the default Start/Stop Code, from Design Mode, choose Options | Preferences, click the + symbol beside the TEC folder, and follow the instructions to the right to customize the Start/Stop Codes.

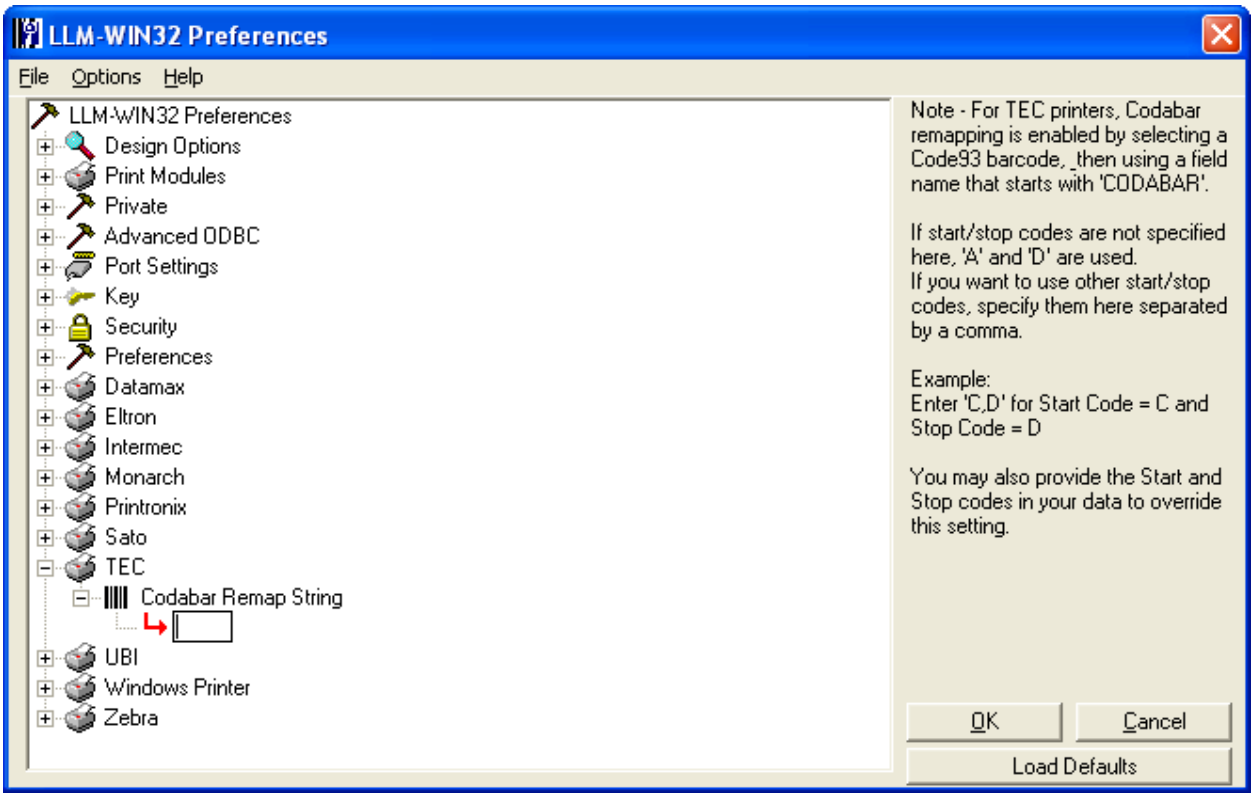


Figure 14.3: TEC Codabar Remap String

TEC Error Information

Error	Description
Paper Jam (on LCD screen)	There is a problem with the media. The problem must be corrected, then turn the printer off & back on.

Error	Description
Time Out	If Loftware times out in the middle of sending a large amount of graphic information (images, TrueType fonts), the printer may be left in a state where it cannot accept any further commands. If this occurs, you must turn the printer off and back on. Try increasing the timeout value for the printer in the Advanced Settings section of the device Connection dialog box.
Printer Commands displayed on LCD screen	If the printer receives commands that are not formatted in a way that it understands, it displays a portion of the command string on the LCD screen. It may look something like the following:

```
{PC001:0120,0680,
Contact Loftware technical support, and please have the following information ready:
Loftware version number
Printer Model and program version number
A specific example or a description of a way to reproduce the error
```

Windows Printers

Windows printers can be configured from the Loftware Label Manager Device Configuration grid - **Options** button or from a label's LSO page.

Note: If you are working in an environment with multiple LPS installations and versions, be aware that sharing LLM / LPS version 9.5 or later Windows printer configuration files with a pre-9.5 version will wipe out any Windows printer configuration settings made in Version 9.5. Windows printer settings made in 9.5 or later are not supported in pre-9.5 versions. Refer to *Sharing Windows Printer Configuration Across LPS Versions* in the Upgrade and Import section of the Loftware Print Server and Label Manager Installation Guide for a best-practice solution.

Windows printer settings available when you select File | Print | Properties from Microsoft Office applications and other popular programs can be set from LLM. This includes settings for Orientation, Page Size, and Paper Source. The default for each of the settings is the setting selected in the Printers and Faxes control panel. However, these can be overridden at the label level (LSO) or at the application level (PSO).

A configuration setting that will be used to print a label depends on where the setting is enabled.

- Label Level: When set from a label's LSO page, a print setting for the specific label supersedes any setting selected at the application level (PSO) or system level.
- Application Level: When set from the printer's PSO page, a Windows printer setting applies to all Loftware label printing and supersedes the system level setting unless a specific label's LSO page specifies a different selection.
- System Level: When set from the printer's Properties page accessed from the system's Printers and Faxes, a Windows printer setting applies to all printing, not just to Loftware labels, unless a different setting is specified from the printer's PSO or a label's LSO page.

To summarize, configuration settings for a Windows printer apply to printing in the following sequence:

1. If the LSO setting is enabled and valid for the printer, #1 (the Label Level setting) is used to print the label. Otherwise, the Application Level setting is used.
2. If the LSO setting is disabled and the PSO setting is enabled and valid for the printer, #2 (the Application Level setting) is used. Otherwise, the System Level setting is used.
3. System Level setting is used if both #1 and #2 (LSO and PSO settings) are disabled.
4. If a job containing a *TRAY command is submitted through LPS, the *TRAY command Paper Source setting overrides the label setting. (Refer to the *TRAY command section of the "Print Request Data Structures" topic in the LPS guide.)

Validation

Internally, the selected Paper Size and Paper Source PSO configuration items, when saved, are identified by both a string and an ID value. The following steps are taken to validate the configuration setting with the capabilities of the printer.

1. If the saved ID matches one of the IDs in the printer's list, then the saved string is compared to the printer's string for that ID. If the strings match, then that ID is used. Otherwise, see #2 below.
2. If the saved string matches one of the strings in the printer's list, then the printer's ID for that string is used. Otherwise, see #3 below.
3. If a matching ID is found in #1 but the saved string does not match the printer's string for that ID, then that ID is used. Otherwise, see #4 below.
4. Validation failed; the setting is not applied (the printer's control panel configuration is used).

Note: Different printer drivers are not necessarily in synch with these strings and IDs. The table below and the validation scenarios that follow provide an example:

Win Printer 1	Win Printer 2	Win Printer 3	Win Printer 4
Printer Auto Select – 257	Printer auto select - 257	Auto Select - 7	Auto Select - 262
Manual Feed (Tray 1) – 4	Manual Feed (Tray 1) - 258	Manual Feed - 4	Manual Paper Feed – 4
		2000 Sheet Input Tray - 259	Tray 3 - 259

Some Validation Scenarios

- A label designed for Win Printer 1 with a "Manual Feed (Tray 1)" setting, when printed to Win Printer 2 would result in the Paper Source ID value of 258 being set in the print time configuration (Validation step # 2).

- A label designed for Win Printer 3 with a "2000 Sheet Input Tray" setting, when printed to Win Printer 4, would result in the Paper Source ID value of 259 being set in the print time configuration (Validation step # 3).

Windows Printer Options

Windows Label Specific Options

Label Specific Options can be set for a Windows printer, except when the target printer is the Generic Windows Printer.

Leave the settings unchecked if you wish to use Windows Printer settings to print the label.

Configuring a Windows Printer from the label's LSO page will apply the settings to the specific label only. The settings are applied for all printing of this label until changed. To set an option, click the check box, and then select from the drop-down list.

Print settings specified for a label from the LSO page supersede settings selected from the system (Printers or Faxes) or from the PSO page. Note that because the settings from the LSO page apply to the label and not to the printer, the Printer Control Panel button that is accessible from the PSO page is not available.

Refer to the Windows Printers topic for information on how configuration settings are applied to print a label when these settings are specified from different properties pages.

Note: Loftware Label Manager Design ignores the margins set in Windows printer drivers. This may result in the fields on your label shifting by the size of the margin. You can reposition the label fields by the size of the margin to properly position the fields on the printed label.

Windows Printer Specific Options

Note: If you are working in an environment with multiple LPS installations and versions, be aware that sharing LLM / LPS version 9.5 or later Windows printer configuration files with a pre-9.5 version will wipe out any Windows printer configuration settings made in Version 9.5. Windows printer settings made in 9.5 or later are not supported in pre-9.5 versions. Refer to *Sharing Windows Printer Configuration Across LPS Versions* in the Upgrade and Import section of the Loftware Print Server and Label Manager Installation Guide for a best-practice solution.

Leave the settings unchecked if you wish to use the system's Windows Printer settings to print the label.

From the printer's PSO page, you can configure settings for this Windows printer that affect printing at the application level. The settings are applied not just to the specific label but for all label printing, unless a specific label has a different label level setting specified in its LSO page. To set an option, click the check box, and then select from the list.

Clicking **Printer Control Panel** takes you to the Windows printer properties box after you respond to the warning message. Windows printer configuration changes are applied at the system level. This will affect all printing on this printer, not just Loftware label printing.

System printer settings apply if PSO or LSO settings are not set for the label. PSO options when set supersede the system settings and will be used to print the label and all labels, unless a label's LSO printer settings are specified. When LSO settings are specified, they will be used to print the specific label.

Related Information
Refer to the *Windows Printers* section for information on how configuration settings are applied to print a label when these settings are specified from different properties pages.

Zebra Printers

This printer guide provides information specific to the Zebra family of printers.

Supported Printer Models

Loftware supports the following Zebra printer models.

ZPL Language Printers							EPL Language Printers
90A	105	170PAX 4	A300	R110PAX3	S4M (DPL)	Z400 0	2443 Orion
90xi	105S	170xi	DA40 2	R110PAX4	S4M (EPL)	Z4M	2684
90xiII	105SE	170xiII	HT-146	R110XiIIIPl us	S4M (IPL)	Z4M Plus	2722
90xiII 600dpi	105SL	170xiIII	Px40 0	R110Xi	S4M (ZPL)	Z600 0	2742
90xiIII	110PAX 3	170xiIII Plus	QL22 0	R140	Stripe 300	Z6M	2746
90xiIII Plus	110PAX 4	17XPAX	QL32 0	R170Xi	Stripe 400	Z6M Plus	2746e
91	110xiIII Plus	17XPAX 2	QL42 0	R2844-Z	Stripe 500	ZM40 0	2824
95	130	220xi		R402	Stripe 600	ZM60 0	2844
96xiIII	140	220xiII		R4M Plus	T300		2844-Z TLP/LP
96xiIII Plus	140xi	220xiIII		RW420	TA402		3742
	140xiII	220xiIII Plus					3842
	140xiIII	221					3844-Z TLP/LP

ZPL Language Printers							EPL Language Printers
	140xiIII Plus						
	160S						

Loftware supports the following RFID Printer Models

RFID Tag Printers
R110 PAX3 RFID
R110 PAX4 RFID
R110XiIIIPlus RFID
R110Xi RFID
R140 RFID (HF)
R170Xi RFID
R402 RFID (HF)
R4M Plus RFID
R2844-Z RFID (HF)

Supported Printer Family Drivers

Certain Zebra printers may support the use of other printer languages. The following Printer Family Drivers can be selected with Zebra printers.

- ZPLII
- EPL2
- IPL

Pass Through Fields

Zebra printers using ZPLII printer language support the use of Pass Through fields. A Pass Through field allows you to fully define a label field with the field's data. You can insert printer language directly into a label field and pass ZPL commands through the Loftware native driver directly to your printer. This may allow you greater control over a barcode, and give you the ability to include options that may not be supported by Loftware's native driver.

See Pass Through Fields in the Customizing Labels section of this guide for more information and instructions on creating Pass Through fields.

Related Information
Updated printer information is available at Loftware's Web site, www.loftware.com. See Printers on the Technical Support page.
Refer to the RFID Devices and Tag Types section for information on tag types supported by the Zebra RFID printers.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Interface	Description
Parallel Interface (optional interface)	Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.
Serial Interface (standard interface)	Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.
USB Interface (standard or optional interface)	Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Supported Features

Image Support

Images are downloaded and stored in the printer's image memory. Loftware Label Manager remembers images that are sent to the printer and only resends an image if the image is changed.

Supported Fonts

Most Zebra printers come standard with 8 bitmapped fonts, and 1 scaleable font. Additional downloadable fonts are also available. Consult your printer manual for available fonts. TrueType fonts are downloaded to the Zebra printers as graphics.

Zebra (and ZPLII) Options

Zebra Options may be label-specific or printer-specific.

Zebra Label Specific Options

Label Specific Options (LSOs) can be accessed when you click **Label Options** from the **Label Setup and Properties** dialog (F5).

Label Options Section	
Print Speed	This option allows the user to vary the speed at which the label prints. The range of available print speeds varies with the selected printer type.

Label Options Section	
Darkness	Darkness allows you to control the darkness of the print. 0 is the nominal setting.
Label Top	This command moves the entire label format up or down from its current position. Inputting a negative value moves the format toward the top of the label. Inputting a positive number moves the format away from the top of the label.
Flip Label 180 Degrees	This command prints a label that has been inverted 180 degrees.
Print Mirror Image of Label	This command instructs the printer to print the entire label as a mirror image. The image is flipped from left to right.
Print Label as White on Black	This instruction reverses the printing of all fields on the label format. The fields are printed as white on a black background.

Character Options Section	
Character Set	Default is set to using the Character Set specified in Printer Options (PSOs) but the list displays other Character Sets that may be chosen.
Double Byte Character Set	Default is set to using the Character Set specified in Printer Options (PSOs) but the list displays other Double Byte Character Sets that may be chosen.

Custom ZPL Section	
ZPL Command	The ZPL command option sends printer commands otherwise not available in the Loftware Label Manager dialog boxes.
Send Command	This command instructs Loftware Label Manager when to send a ZPL command. ■ After Label ■ After ZPL Control Strings ■ Before Label ■ Last Command After ^PQ ■ Last Command Before ^PQ

Label Cut Options Section	
Cut Option	Choose Printer Cut Options (as set in PSOs which is the default setting)
Cut Interval	Zero is the default but the Cut Interval may be set to cut after any number of labels

Field Locations Section	
DataMatrix Field Origin	Select the location of DataMatrix fields on the label. ■ Use Global Setting - Select to use the setting for Zebra printers set in Options | Preferences. ■ Use Default Setting - Select to use the default location for DataMatrix fields (top-left). ■ Use Bottom Left - Select to cause DataMatrix fields to be located on the bottom left corner of the field in relation to the field's true rotation.

Zebra Printer Specific Options

Printer Specific Options (PSOs) can be accessed by clicking **Options** while configuring the printer or by selecting the printer from the Device Configuration grid and clicking **Options**.

The printer options available will vary based on the printer model selected. Certain options are only available with the ZPLII Family Driver.

Printer Options Section	
PrintMode	The Print Mode instruction determines the action the printer takes after a label or group of labels has been printed. There are five different modes of operation: ■ **Cutter** - The web separating the printed label and the next blank label to be printed is extended into the cutter mechanism. The label is cut; the blank label is then retracted into the printer so that it can be printed. ■ **Peel Off** – After printing, the label is partially separated from the backing. Printing stops until the label is completely removed. Peel off handling requires that the stock in the printer be properly fed through the peel off attachment on the printer. Select only if printer is equipped with an internal rewind spindle. ■ **Rewind** - Label and backing are rewound on an optional internal rewind device. The next label is positioned under the printhead. ■ **Tear Off** - After printing, the label is advanced so that the web is over the tear bar. Label, with backing attached, can then be torn off manually. ■ **Applicator** – After printing, the label may be mechanically removed and applied to an object. ■ **Don't Send** - The PrintMode instruction is not sent to the printer. Select this option if you want to retain the printer's PrintMode setting. **Note:** The **Don't Send** option is only available if you select the ZPLII family driver as the printer Model. If the Label Cut Option, **Cut Option**, is set to **Use Label Cut Options**, the Print Mode setting IS sent to the printer

Printer Options Section	
Media	■ **Thermal Transfer (Ribbon)** - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath heating the ribbon material and melting it onto the label. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary. ■ **Direct Thermal (No Ribbon)** - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print, decrease/increase the speed and increase/decrease the heat as necessary. ■ **Don't Send** - The Media instruction is not sent to the printer. Select this option if you want to retain the printer's Media setting. **Note:** The **Don't Send** option is only available if you select the ZPLII family driver as the printer Model.
Backfeed	The default is the default for the selected Print Mode. Other options include: ■ **After Print** - causes the printer to backfeed (retract) between each label that is printed. ■ **Before Print** - causes the printer to backfeed (retract) before each label that is printed. ■ **Suppress** - causes the printer to suppress the backfeeding or retracting action before print and after print. ■ **Suppress Except Last Label** - causes the printer to suppress the backfeeding or retracting action before print and after print, except before or after the last label has printed. ■ **Don't Send** - The Backfeed instruction is not sent to the printer. Select this option if you want to retain the printer's Backfeed setting. **Note:** The **Don't Send** option is only available if you select the ZPLII family driver as the printer Model.

Printer Options Section	
Stock Type	■ **Continuous** - No gaps or separations between labels. ■ **Non-Continuous** – Gap, perforation or separation between each label. ■ **Mark Stock** - Black line or mark on the label stock backing. ■ **Web** – Perforation, gap, or separation between each label. ■ **Don't Send** - The Stock Type instruction is not sent to the printer. Select this option if you want to retain the printer's Stock Type setting. **Note:** The **Don't Send** option is only available if you select the ZPLII family driver as the printer Model.
Character Set	Default is set to using the Character Set specified in Printer Options (PSOs) but the list displays other Character Sets that may be chosen.
Double Byte Character Set	Default is set to using the Character Set specified in Printer Options (PSOs) but the list displays other Double Byte Character Sets that may be chosen.
Download Graphics To	■ DRAM – The default location for graphic storage is the printer's internal memory. This is volatile memory; if the printer is powered off, the graphics are lost. ■ EEPROM - This is a battery-backup type memory. If the printer is powered off, the graphics remain in memory. ■ PCMCIA - This is a memory card which can be removed from the printer.
Cut Interval	Number of printed labels between cuts. If the cutter is enabled, and the cut interval is set to 0 (zero), then the printer cuts the label after the batch.
Tear Off	Adjusts the rest point of the media after a label is printed, which changes the position at which the label can be torn off or cut. By default, the Tear Off settings are sent to the printer. If you do not want any Tear-Off settings sent to the printer, this may be disabled in Preferences. In LLM Design Mode: Options | Preferences | Zebra.
Always Download Format	Instructs the Loftware Label Manager system to send the label format with every print request.
Override Pause Count	This overrides the Paused Count setting, which is controlled by the Cut Interval selection.
Enable Zebra Network	This setting enables the printer to connect with the Zebra Network.

Printer Options Section	
Ignore Printer Status	When this option is enabled, data is sent directly to the printer without checking the printer's status. In this mode, the Loftware Label Manager system does not get messages back from the printer in the event an error occurs.
Use ZPL II	This function enables the use of ZPL II commands. ZPL II is enabled by default. See the ZPL II Programming Guide for information on commands.
Z64 Compression	This function enables the use of Z64 compression. Z64 Compression is enabled by default. See the ZPL II Programming Guide for information on Z64 compression.
Only re-send fields that have changed	When checked, only the data that has been changed is re-sent for printing.
Send Options [Label/Printer]	When enabled, all label and printer options set are sent to the printer. Disable this option to retain the settings set at your printer. **Note:** If you are using the ZPL II family driver as the printer model, you can selectively not send certain options (PrintMode, Media, Backfeed, and Stock Type) by selecting **Send Options (Label/Printer)** and selecting **Don't Send** for the options that you do not want to sent to the printer.
Font Options Section	
Character Set	Several printer languages are available to print international characters that are not available in the U.S. character set. See your printer guide to find the corresponding hex codes used to select the desired character.
DB Char Set	The list displays options for Double Byte Character Set.
Custom Command Section	
ZPL Command	The ZPL command option sends printer commands otherwise not available in the Loftware Label Manager dialog boxes. See the *ZPLII Programming Guide* for printer commands.
Send Command	Send Command instructs the Loftware Label Manager system when to send the ZPL Command.
Send To Printer	Click to immediately send the ZPL Custom Command to the printer.

Real Time Clock Section

These settings will apply only if the Real Time Clock option is supported by and installed in the printer. This will place a time/date stamp on the label.

Option	
Field Clock Indicators	Specify the character(s) that will precede and indicate a time/date value. For example, the default indicator for the primary clock is %. There are no default indicators for the secondary and tertiary clocks. Most printable characters are acceptable except those that conflict with ZPL II commands. Refer to your ZPL II manual (volume 2) for more information. If indicators for secondary and tertiary clocks are entered, separate the characters with a comma.
Set Date/Time	This displays options for the current clock date/time. Select AM, PM, or Military time format.
Set Clock Offset	This displays options for the secondary and tertiary clocks. Time and date are determined by adding the offsets to the primary clock reading. The Language selection determines the language to use for the days and the months. In Start Time mode, the time printed on the label is the Real Time Clock time when label formatting begins. In Time Now mode, the time printed on the label is the Real Time Clock time when label is placed in the print queue.

Real Time Clock can be set either in the printer's LCD or from the printer's PSO dialog. Fields that will be using Real Time Clock should be defined as "fixed fields" in Loftware. The fields must use the reserved field name of `ZtimeFieldxxx`, where x allows for unique identification. Only the first 10 characters of the reserved field name are evaluated, and so the field can be uniquely defined after the reserved portion. The fixed fields must provide the date formatting as data.

As a minimum, the Field Clock Indicator should contain a % for use with the primary clock. If all three clocks are used the suggested syntax for the Field Clock Indicators might look like: %,#,@

Note: The symbols ^ and ~ are excluded from use. Any symbol not expected to be used in the printed output may be used.

Sample data in the fixed field may be as follows based on the above field indicator settings:

```
Field Name (in Properties dialog) – ZtimeFieldCurDate
Primary clock data: %A, %B %d, %Y %I:%M
Printed result: Monday, January 01, 2001 01:06

Field Name (in Properties dialog) – ZtimeFieldSecDate
Secondary clock data: #A, #B #d, #Y #I:#M
Secondary clock offset values all set to 3
Printed result: Sunday, April 4, 2004 04:07

Field Name (in Properties dialog) – ZTimeFieldTerDate
Tertiary clock data: @A, @B @d, @Y @I:@M
Tertiary clock offset values all set to 5
Printed result: Tuesday, June 06, 2006 06:12
```

Zebra RFID Printer Options

The following information applies to Loftware-supported Zebra RFID printers.

Zebra Label Specific RFID Options	
Use Label or Printer Options	This allows you to use either your settings in the Label Specific Options or those set in the Printer Specific Options.

Set Up Options Section	
Send Setup Options to Printer	When checked, the setup options selected on this dialog are used for printing.
Tag Type	Auto-detect automatically determines the tag type by querying the tag. Select "None" if no tags are available. If the printer supports it, select from: EPC Class 0, EPC Class 0 Plus, EPC Class 1 64-bit, EPC Class 1 96-bit, ISO 18000-06B, EPC Gen2, Philips HF I-Code, Philips HF I-Code ISO 15693, TI HF Tag-it, or TI HF Tag-it ISO 15693. (Note that not all tag types are supported by all printers. Refer to the RFID Devices and Tag Types section.)
Transponder Position From Top of Label	The position in Dot Rows from the top of the label to the RFID Transponder embedded in the label. The default position is 8 Dot Rows from the top of the label. '0' dot rows means that the Transponder is not to be moved from its default position.
Length of Void Printout	This lets you determine how much of the label is printed with a "VOID" warning when the encoding or reading of the RFID tag fails. The default of "0" prints the VOID message the entire length of the label.
Number of Labels to Retry in Case of Read/Encode Failure	This setting allows you to determine how many retries are allowed after a failure while encoding the RFID tag or label. As the cost of RFID smart labels and tags is still fairly high, setting this to a low number may be advisable.

Write Options Section	
Number of Times to Retry	This setting determines the number of times to retry writing to the tag in case of initial failure. The default setting is 0.
Feed Label After Writing	When checked, the label is fed from the printer for removal and use after writing.
Enable RFID Motion	By default, labels automatically print at the end of the format. When deselected, the label is not moved when it reaches the program position. Note that this setting must be specified for each label; it is not automatically carried over from one label to the next.
Write Protect	When checked, the data written to the tag is protected and the tag may not be written to again. This could be used for example, as a pre-emptive step to prevent a label in transit from being altered, thus rendering the original encoding to the tag invalid.

Read Options Section	
Number of Times to Retry	This setting determines the number of times to retry writing to the tag in case of initial failure. The default setting is 0.
Enable RFID Motion	By default, labels automatically print at the end of the format. When deselected, the label is not moved when it reaches the program position. Note that this setting must be specified for each label; it is not automatically carried over from one label to the next.
Feed Label After Reading	When this is checked, the label is fed from the printer for removal and use after reading.

Zebra Printer Specific RFID Options

Set Up Options Section	
Send Setup Options to Printer	When this is checked, settings are used for printing.
Tag Type	This is set to Auto-Detect, by default, which automatically determines the tag type by querying the tag. Other choices are None (no tags available), Texas Instruments Tag-it, and Philips I-Code.
Transponder Position From Top of Label	The position in Dot Rows from the top of the label to the RFID transponder embedded in the label. The default position is 8 Dot Rows from the top of the label. '0' dot rows means that the media should not to be moved from its default position. This setting may be particularly important if you are not using Zebra RFID label stock in your printer, as the transponder position may be quite different.
Length of Void Output	This lets you determine how much of the label is printed with a "VOID" warning when the encoding or reading of the RFID tag fails. The default of "0" prints the VOID message the entire length of the label. This may or may not be helpful, as the VOID printing would use up more of the printer's ribbon, but on the other hand, it would make the failure of the tag's encoding or reading more visible and therefore more evident.
Number of Labels to retry in case of read/encode failure	This setting allows you to determine how many retries are allowed after a failure while encoding or reading the RFID tag.
Detect Multiple Tags in Encoding Field	

Write Options Section	
Number of Times to Retry	This setting determines the number of times to retry writing to the tag in case of initial failure. The default setting is 0.
Enable RFID Motion	By default, labels automatically print at the end of the format. When deselected, the label is not moved when it reaches the program position. Note that this setting must be specified for each label; it is not automatically carried over from one label to the next.
Write Protect	When checked, the data written to the tag is protected, and the tag may not be written to again. This could be used, for example, as a pre emptive step to prevent a label in transit from being altered thus rendering the original encoding to the tag invalid. The default setting is not checked.

Read Options Section	
Number of Times to Retry	This setting determines the number of times to retry reading the tag data in case of initial failure. The default setting is 0. This setting only applies if you have set the Human Readable property of the RFID field to "Read Tag."
Enable RFID Motion	By default, labels automatically print at the end of the format. When deselected, the label is not moved when it reaches the program position. Note that this setting must be specified for each label; it is not automatically carried over from one label to the next.
Use Old RFID Firmware	This check box is available for multi-protocol printers (R4M Plus RFID, R110Xi3 Plus RFID and RPAX3 RFID Zebra printers). When selected, the old Write Tag and Read Tag commands (^WT & ^RT) for the printer are used, instead of the new Zebra command set.

Zebra Printer Capabilities and Limits

Capability	Description
Maximum Number of Fields	The maximum number of fields per label format is 200.
Maximum Image Size	The maximum size of any image is 600 dots x 600 dots. The physical size of the image depends on the resolution of your printer. Note that the actual size of images the printer is able to handle is determined by the amount of RAM installed in your printer If images are displayed in Loftware Label Manager label design but do not print, the printer may not have enough memory to store the image.

Capability	Description
Printed Barcode Does Not Match the Design	It is possible to define a combination of attributes, such as line width or ratio, that the printer cannot produce, or might print in one orientation but not another. Under these conditions, the printer may print the closest possible barcode. This usually occurs when you define a barcode with line width 1. The printer sometimes promotes this to a line width 2 barcode, resulting in a printed barcode that is twice as long as desired.
Disappearing Fields	The Advanced printers do not print any field with an invalid definition For example, if you define a UPC-A barcode, which requires exactly 11 digits, and then provide alphabetic data at print time, the printer does not print the field. If your label test prints correctly but fields do not print in production printing, check your data carefully to make sure it is valid.
Using CODE 128	Refer to the section on building Code 128 or GS1-128 (UCC-128) symbologies.
Zebra Incrementing / Decrementing Fields	When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called Native Mode. When printing in Native Mode, control returns to the computer almost immediately. **Note:** Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally, and sends down a different set of data for each label. This is called Extended Mode. In Extended mode, the Printing dialog box shows the line "Printing Label x of y" and control does not return to the computer until the entire series of labels is printed.
Set Label Size	The label size is used as a frame of reference. When you rotate your label, or when you rotate the printing of a label, it is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

Zebra TrueType Font Handling

Some Zebra printers are capable of storing fonts. Zebra provides a utility that allows TrueType Fonts (TTF) to be downloaded to a memory location in the printer. The advantage to this is that you do not have to remap a font and guess at what size it prints on the label.

Note: Contact Zebra or your printer's documentation to determine if your printer can store fonts.

Download Fonts to the Printer

Download the required TrueType Fonts (TTF) to the Zebra printer via the ZebraNet Bridge Enterprise application.

Configure Fonts in Loftware Label Manager

The effect of this is that the fonts downloaded to your Zebra printer and configured in Loftware Label Manager are available from the Font field of the Properties box when Native Fonts is selected as the Font Category.

1. Select Options | Preferences from the menu. The **Preferences** window opens.
2. Expand Zebra.

3. Enter the font information in one of the **DBCS# Ext Scalable Font** fields. Use the following information to construct the font reference.

Extended Scalable Font Configuration

The following is the structure of the font reference you must enter in the **DBCS# Ext Scalable Font** field to reference a TTF stored on the printer.

[Font Number],[Font Storage Device]:[Font Name],[Encoding Type],[Encoding Table Storage Device]:[Encoding Table Name],[Font Display Name]

Setting	Description	Options
Font Number	The number of the font in the printer	
Font Storage Device	The storage location, in the printer, where the font is saved	R=DRAM B=Memory Card E=Eprom Z=Built In
Font Name	The name of the font as it is stored in the printer	Extension Types FNT TTF TTE
Encoding Type	The encoding type	14-Default 15=ShiftJIS 16=EUC-JIS 17=Unicode 28=UTF-8
Encoding Table Storage Device	The storage location, in the printer, where the encoding table is saved. **Note:** When referencing TTF fonts, this name should be left blank.	R=DRAM B=Memory Card E=Eprom Z=Built In
Encoding Table Name	The name of the encoding table as it is stored in the printer. **Note:** When referencing TTF fonts, this name should be left blank.	
Font Display Name	The name of the font as you want it to display in Loftware Label Manager	Text

For Example

When referencing a TTF font, the Encoding Table Storage Device and the Encoding Table Name are not required.

Reference a TTF: 1,B:ArialUni.ttf,28,:,Arial

Reference an FNT: 1,B:MINCHO.FNT,15,B:JIS.DAT,Arial

Zebra Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. All labels print when the printer is turned back on.	Error message. When the printer is re-connected, all labels print.	Error message. When the stock is added, all labels print.	Error message. When the print head is down, all the labels print.
COM	Not tested.	Not tested.	Not tested.	Not tested.
Spooled Locally	Error message. The labels print once the printer is turned back on.	Error message. The labels print once the printer is reconnected.	Error message. The labels print after stock is added.	Error message. The labels print fine after print head is down.
Spooled to Shared	No error msg. When the printer is turned back on, all labels print.	No error msg. When reconnected all labels print.	No error msg. When stock is added all labels print.	No error msg. When print head is put down all the labels print.
Spooled to PrintServer	No error msg. When the printer is on, all labels print	No error msg. When reconnected, the labels print.	No error msg. When stock is added, all labels print.	No error msg. When head is down, the labels print.
Direct IP	No error msg. When the printer is turned back on all labels print.	No error msg. If reconnected, the labels do not print.	No error msg. When stock is added, all labels print out.	No error msg. When print head is put down, all the labels print.

Tag Configuration

This section outlines relevant block configuration of the RFID tags supported by Loftware RFID devices.

HF RF tagging system uses the 13.56 MHz frequency range. Currently, HF tag types are supported by some Loftware RFID printers. See the next section on RFID Devices and Tag Types.

HF Tag Type	Configurable Data Blocks
Philips HF I-Code	Blocks 5 to 15 can be encoded, each with a block size of 4 bytes. (16 blocks total; blocks 0 to 4, which are not user-accessible, contain the serial number, write-access conditions and configuration bits.) Supports Lock Tag after Writing, Overflow, EAS, and AFI features.
Philips HF I-Code ISO 15693	The higher blocks – 0 to 27 – are used for user data, each with a block size of 4 bytes. RF interface is defined by the ISO 15693 standard. (32 blocks total; the lowest blocks (-4 to -1), which are not user-accessible, contain the unique identifier, write access conditions, and other special data.) Supports Lock Tag after Writing, Overflow, EAS, AFI, and DSFID features.

HF Tag Type	Configurable Data Blocks
TI HF Tag-it	User data is contained in blocks 0-7. Each block consists of 4 bytes. Supports Lock Tag after Writing and Overflow features.
TI HF Tag-it ISO 15693	User data is organized into 64 blocks (0 to 63). Each block consists of 4 bytes. RF interface is defined by the ISO 15693 standard. Supports Lock Tag After Writing, Overflow, AFI, and DSFID features.

The following UHF tag types are supported by Loftware. See also the next section on RFID Devices and Tag Types.

UHF Tag Type	User-accessible Data Blocks
UHF 64-bit Class 1	PC block = 1 byte - used to lock the tag EPC block = 8 bytes - used for EPC / DOD / URI
UHF 96-bit Class 1	PC block = 1 byte - used to lock the tag EPC block = 12 bytes used for EPC / DOD / URI
UHF 96-bit Class 0+	KC block = 3 bytes - used to lock the tag EPC block = 12 bytes used for EPC / DOD / URI USR block = 13 bytes - used for user specific data
UHF UCODE EPC 1.19	Block #0 = 12 bytes
UHF ISO 18000-6B	Block #0 = 200 bytes
UHF Class 1 Gen 2	32-bit Access Password 32-bit Kill Password 96-bit EPC 32-byte USR block

RFID Devices and Tag Types

In order to encode data on RFID labels and tags, an RFID device must support specific RFID commands. Some RFID printers exclusively support encoding to UHF tag types. Others will write only to HF tags. A few printers support both UHF and HF tags.

The tables below list current Loftware RFID printers and the tag types each supports.

RFID UHF Printers

This table shows Loftware RFID Gen 1 and Gen 2 UHF printers for smart labels and the UHF tag types each supports.

	UHF Gen 1					UHF Gen 2	
	64-bit Class 1	96-bit Class 1	96-bit Class 0+	UCODE EPC 1.19	ISO 18000-6B	Impinj Monza	TI Dallas
Avery 6404 RFID	X	X		X			X
Avery 6405 RFID	X	X		X			X
Avery 6406 RFID	X	X		X			X
Avery 6408 RFID	X	X		X			X
Avery ALX 924 RFID	X	X		X			X
Avery ALX 925 RFID	X	X		X		X	X
Avery ALX 926 RFID	X	X		X			X
Avery DPM 4 RFID	X	X		X			X
Avery DPM 5 RFID	X	X		X			X
Avery DPM 6 RFID	X	X		X			X
Datamax A-4212 RFID	X	X					
Datamax A-4310 RFID	X	X					
Datamax A-4408 RFID	X	X					
Datamax A-4606 RFID	X	X					
Datamax A-6212 RFID	X	X					
Datamax A-6310 RFID	X	X					
Datamax H-4212X RFID		X	X	X	X	X	X
Datamax H-4310X RFID		X	X	X	X	X	X
Datamax I-4210 RFID*	X	X	X	X		X	X
Datamax I-4212 RFID*	X	X	X	X		X	X
Datamax I-4308 RFID*	X	X	X	X		X	X
Datamax I-4406 RFID*	X	X	X	X		X	X
Datamax I-4604 RFID*	X	X	X	X		X	X
FOXIV SPLA 7204e RFID	X	X	X	X		X	X
FOXIV SPLA 7304e RFID	X	X	X	X		X	X

	UHF Gen 1					UHF Gen 2	
	64-bit Class 1	96-bit Class 1	96-bit Class 0+	UCODE EPC 1.19	ISO 18000-6B	Impinj Monza	TI Dallas
IBM Infoprint 6700 5504-R40 (203 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R40 (300 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R60 (203 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R60 (300 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R80 (203 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R80 (300 dpi) RFID	X	X	X	X		X	X
Intermec EasyCoder PM4i RFID (FP)	X	X		X	X	X	X
Intermec EasyCoder PM4i RFID (IPL)	X	X		X	X	X	X
Monarch 9855 RFID	X	X					
Monarch 9855 RFMP	X	X	X	X		X	X
Printronix LPA8204r RFID	X	X	X	X		X	X
Printronix LPA8304r RFID	X	X	X	X		X	X
Printronix SL5204 RFID	X	X	X	X		X	X
Printronix SL5204r RFID	X	X	X	X		X	X
Printronix SL5304 RFID	X	X	X	X		X	X

	UHF Gen 1					UHF Gen 2	
	64-bit Class 1	96-bit Class 1	96-bit Class 0+	UCODE EPC 1.19	ISO 18000-6B	Impinj Monza	TI Dallas
Printronix SL5304r RFID	X	X	X	X		X	X
Printronix SL5306r RFID	X	X	X	X		X	X
Printronix SL4M RFID	X	X	X	X		X	X
Printronix SLPA5204r RFID	X	X	X	X		X	X
Printronix SLPA5304r RFID	X	X	X	X		X	X
Printronix SLPA7204e RFID	X	X	X	X		X	X
Printronix SLPA7304e RFID	X	X	X	X		X	X
Printronix SLPA8204r RFID	X	X	X	X		X	X
Printronix SLPA8304r RFID	X	X	X	X		X	X
Printronix T4M RFID	X	X	X	X		X	X
Printronix T5204 RFID	X	X	X	X		X	X
Printronix T5204r RFID	X	X	X	X		X	X
Printronix T5206r RFID	X	X	X	X		X	X
Printronix T5208r RFID	X	X	X	X		X	X
Printronix T5304 RFID	X	X	X	X		X	X
Printronix T5304r RFID	X	X	X	X		X	X
Printronix T5306r RFID	X	X	X	X		X	X
Printronix T5308r RFID	X	X	X	X		X	X
SATO CL408e RFID*	X	X			X	X	X

	UHF Gen 1					UHF Gen 2	
	64-bit Class 1	96-bit Class 1	96-bit Class 0+	UCODE EPC 1.19	ISO 18000-6B	Impinj Monza	TI Dallas
SATO CL412e RFID	X	X			X	X	X
SATO M8485Se RFID	X	X				X	X
TEC B-SX4 RFID	X	X		X	X	X	X
TEC B-SX5 RFID	X	X		X	X	X	X
Zebra R110 PAX3 RFID	X	X					
Zebra R110 PAX4 RFID	X	X	X		X	X	X
Zebra R110 XiIIIPlus RFID			X				
Zebra R110 Xi RFID	X	X	X		X	X	X
Zebra R170Xi RFID	X	X	X		X	X	X
Zebra R4M Plus RFID	X	X					

*The Datamax I-4210 RFID, I-4212 RFID, I-4308 RFID, I-4406 RFID, I-4604 RFID, and the SATO CL408e RFID also support HF encoding. See Table B-3 below.

RFID HF Printers

The table below shows Loftware RFID HF printers for RFID smart labels and the HF tag types that each supports. Note that the Datamax printers on this table also support UHF tags. The SATO printer also supports UHF tags. (These are listed in the tables above and/or below.)

	Philips HF I-Code	Philips HF I-Code ISO 15693	TI HF Tag-it	TI HF Tag-it ISO 15693
Datamax I-4210 RFID*		X		X
Datamax I-4212 RFID*		X		X
Datamax I-4308 RFID*		X		X
Datamax I-4406 RFID*		X		X
Datamax I-4604 RFID*		X		X

	Philips HF I-Code	Philips HF I-Code ISO 15693	TI HF Tag-it	TI HF Tag-it ISO 15693
SATO CL408e*	X	X	X	X
Zebra R140 RFID	X		X	
Zebra R2844-Z RFID	X	X	X	X
Zebra R402 RFID	X	X	X	X

*The Datamax I-4210 RFID, I-4212 RFID, I-4308 RFID, I-4406 RFID, I-4604 RFID, and the SATO CL408e RFID also support UHF encoding. See Table B-3 below.

RFID HF / UHF Printers

This table shows Loftware RFID printers for smart labels that support both HF and UHF and the tag types each supports.

	UHF Gen 1					UHF Class 1 Gen 2		HF Gen 1			
	64-bit Class 1	96-bit Class 1	96-bit Class 0+	UCODE EPC 1.19	ISO 18000-6B	Impinj Monza	TI Dallas	Phillips I-Code	Phillips I-Code ISO15693	TI Tag-it	TI Tag-it ISO 15693
Datamax I-4210 RFID	X	X	X	X		X	X		X		X
Datamax I-4212 RFID	X	X	X	X		X	X		X		X
Datamax I-4308 RFID	X	X	X	X		X	X		X		X

	UHF Gen 1					UHF Class 1 Gen 2		HF Gen 1			
	64-bit Class 1	96-bit Class 1	96-bit Class 0+	UCODE EPC 1.19	ISO 18000-6B	Impinj Monza	TI Dallas	Phillips I-Code	Phillips I-Code ISO15693	TI Tag-it	TI Tag-it ISO15693
Datamax I-4406 RFID	X	X	X	X		X	X		X		X
Datamax I-4604 RFID	X	X	X	X		X	X		X		X
SATO CL408e	X	X			X	X	X	X	X	X	X

The following section contains tables to use as reference when creating labels.

- ASCII Code 39 Reference Table
- Code 128 Character Sets
- Wedge Reader Conversion Chart
- IBM ASCII Chart
- IBM ASCII Chart Extended
- Language Properties Wizard Flowchart

References

The following sources were referenced for this section. See these sources for more information.

http://www.w3schools.com/tags/ref_ascii.asp

http://en.wikipedia.org/wiki/ASCII

http://en.wikipedia.org/wiki/Extended_ASCII

ASCII Code 39 Reference Table

ASCII – Code39							
ASCII	**CODE39**	**ASCII**	**CODE39**	**ASCII**	**CODE39**	**ASCII**	**CODE39**
NUL	%U	SP	SPACE	@	%V	a	+A
S0H	$A	!	/A	A	A	b	+B
STX	$B	"	/B	B	B	c	+C
ETX	$C	#	/C	C	C	d	+D
EOT	$D	$	/D	D	D	e	+E
ENQ	$E	%	/E	E	E	f	+F
ACK	$F	&	/F	F	F	g	+G
BEL	$G	’	/G	G	G	h	+H
BS	$H	(	/H	H	H	i	+I
HT	$I	)	/I	I	I	j	+J

ASCII – Code39							
ASCII	**CODE39**	**ASCII**	**CODE39**	**ASCII**	**CODE39**	**ASCII**	**CODE39**
LF	$J	*	/J	J	J	k	+K
VT	$K	+	/K	K	K	l	+L
FF	$L	,	/L	L	L	m	+M
CR	$M	-	-	M	M	n	+N
SO	$N	.	.	N	N	o	+O
SI	$O	/	/O	O	O	p	+P
DLE	$P	0	0	P	P	q	+Q
DC1	$Q	1	1	Q	Q	r	+R
DC2	$R	2	2	R	R	s	+S
DC3	$S	3	3	S	S	t	+T
DC4	$T	4	4	T	T	u	+U
NAK	$U	5	5	U	U	v	+V
SYN	$V	6	6	V	V	w	+W
ETB	$W	7	7	W	W	x	+X
CAN	$X	8	8	X	X	y	+Y
EM	$Y	9	9	Y	Y	z	+Z
SUB	$Z	:	/Z	Z	Z	{	%P
ESC	%A	;	%F	[	%K	|	%Q
FS	%B	<	%G	\	%L	}	%R
GS	%C	=	%H	]	%M	~	%S
RS	%D	>	%I	^	%N	DEL	%T,%X,%Y,%Z
US	%E	?	%J	_	%O	'	%W

Code 128 Character Sets

Code 128 Character Sets											
Value	**Code A**	**Code B**	**Code C**	**Value**	**Code A**	**Code B**	**Code C**	**Value**	**Code A**	**Code B**	**Code C**
0	SP	SP	00	36	D	D	36	72	BS	h	72

Code 128 Character Sets											
Value	**Code A**	**Code B**	**Code C**	**Value**	**Code A**	**Code B**	**Code C**	**Value**	**Code A**	**Code B**	**Code C**
1	!	!	01	37	E	E	37	73	HT	i	73
2	"	"	02	38	F	F	38	74	LF	j	74
3	#	#	03	39	G	G	39	75	VT	k	75
4	$	$	04	40	H	H	40	76	FF	l	76
5	%	%	05	41	I	I	41	77	CR	m	77
6	&	&	06	42	J	J	42	78	SO	n	78
7	`	`	07	43	K	K	43	79	SI	o	79
8	(	(	08	44	L	L	44	80	DLE	p	80
9	)	)	09	45	M	M	45	81	DC1	q	81
10	*	*	10	46	N	N	46	82	DC2	r	82
11	+	+	11	47	O	O	47	83	DC3	s	83
12	,	,	12	48	P	P	48	84	DC4	t	84
13	_	_	13	49	Q	Q	49	85	NAK	u	85
14	.	.	14	50	R	R	50	86	SYN	v	86
15	/	/	15	51	S	S	51	87	ETB	w	87
16	0	0	16	52	T	T	52	88	CAN	x	88
17	1	1	17	53	U	U	53	89	EM	y	89
18	2	2	18	54	V	V	54	90	SUB	z	90
19	3	3	19	55	W	W	55	91	ESC	{	91
20	4	4	20	56	X	X	56	92	FS	|	92
21	5	5	21	57	Q	Q	57	93	GS	}	93
22	6	6	22	58	Z	Z	58	94	RS	~	94
23	7	7	23	59	[	[	59	95	US	DEL	95
24	8	8	24	60	\	\	60	96	FNC3	FNC3	96
25	9	9	25	61	]	]	61	97	FNC2	FNC2	97
26	:	:	26	62	^	^	62	98	SHIFT	SHIFT	98
27	;	;	27	63	-	-	63	99	CodeC	CodeC	99
28	<	<	28	64	NUL	.	64	100	CodeB	CodeB	100
29	=	=	29	65	SOH	a	65	101	FNC4	FNC4	101
30	>	>	30	66	STX	b	66	102	FNC1	FNC1	102
31	?	?	31	67	ETX	c	67	103	START	(CodeA)	103
32	@	@	32	68	EOT	d	68	104	START	(CodeB)	104
33	A	A	33	69	ENQ	e	69	105	START	(CodeC)	105
34	B	B	34	70	ACK	f	70				
35	C	C	35	71	BEL	g	71				

Wedge Reader Conversion Chart

DEC	KEYBOARD	ASCII
0	NUM+	NUL
I	NUMLOCK	SOH
2	SCROLL LOCK	STX
3	NUM – [MINUS]	ETX
4	INS	EOT
5	DEL	ENQ
6	SYS REQ	ACK
7	N/A	BEL
8	ALT GR	BS
9	TAB RIGHT	HT
10	CAPS LOCK	LF
11	TAB LEFT	VT
12	ALT	FF
13	CR/ENTER	CR
14	CTRL	SO
15	SHIFT	SI
16	F1	DLE
17	F2	DC1
18	F3	DC2
19	F4	DC3
20	F5	DC4
21	F6	NAK
22	F7	SYN
23	F8	ETB
24	F9	CAN
25	F10	EM
26	HOME	SUB
27	ESC	ESC

DEC	KEYBOARD	ASCII
28	PAGE UP	FS
29	PAGEDOWN	GS
30	PRINT SCREEN	RS
31	END	US
32	SPACE	SP
123	CURSOR UP	{
124	CURSOR DOWN	|
125	CURSOR LEFT	}
126	CURSOR RIGHT	~
127	DEL	BACKSP-DEL

IBM ASCII Chart

Ctrl	Dec	Hex	Char	Code	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
@	0	00	Null	NUL	32	20	SP	64	40	@	96	60	`
A	1	01	☺	SOH	33	21	!	65	41	A	97	61	a
B	2	02	☻	STX	34	22	"	66	42	B	98	62	b
C	3	03	♥	ETX	35	23	#	67	43	C	99	63	c
D	4	04	♦	EOT	36	24	$	68	44	D	100	64	d
E	5	05	♣	ENQ	37	25	%	69	45	E	101	65	e
F	6	06	♠	ACK	38	26	&	70	46	F	102	66	f
G	7	07	•	BEL	39	27	'	71	47	G	103	67	g
H	8	08	▫	BS	40	28	(	72	48	H	104	68	h
I	9	09	∩	HT	41	29	)	73	49	I	105	69	i

Ctrl	Dec	Hex	Char	Code	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
J	10	0a	◙	LF	42	2a	*	74	4a	J	106	6a	j
K	11	0b	♂	VT	43	2b	+	75	4b	K	107	6b	k
L	12	0c	♀	NP	44	2c	,	76	4c	L	106	6c	l
M	13	0d	♪	CR	45	2d	-	77	4d	M	109	6d	m
N	14	0e	♫	SO	46	2e	.	78	4e	N	110	6e	n
O	15	0f	☼	SI	47	2f	/	79	4f	O	111	6f	o
P	16	10	►	DLE	48	30	0	80	50	P	112	70	p
Q	17	11	◄	DC1	49	31	1	81	51	Q	113	71	q
R	18	12	↕	DC2	50	32	2	82	52	R	114	72	r
S	19	13	‼	DC3	51	33	3	83	53	S	115	73	s
T	20	14	╪	DC4	52	34	4	84	54	T	116	74	t
U	21	15	§	NAK	53	35	5	85	55	U	117	75	u
V	22	16	–	SYN	54	36	6	86	56	V	118	76	v
W	23	17	↨	ETB	55	37	7	87	57	W	119	77	w
X	24	18	↑	CAN	56	38	8	88	58	X	120	78	x
Y	25	19	↓	EM	57	39	9	89	59	Y	121	79	y
Z	26	1a	→	SUB	58	3a	:	90	5a	Z	122	7a	z
[	27	1b	←	ESC	59	3b	;	91	5b	[	123	7b	{

Ctrl	Dec	Hex	Char	Code	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
/	28	1c	└	FS	60	3c	<	92	5c	\	124	7c	
]	29	1d	↔	GS	61	3d	=	93	5d	]	125	7d	}
•	30	1e	▲	RS	62	3e	>	94	5e	^	126	7e	~
_	31	1f	▼	US	63	3f	?	95	5f	_	127	7f	

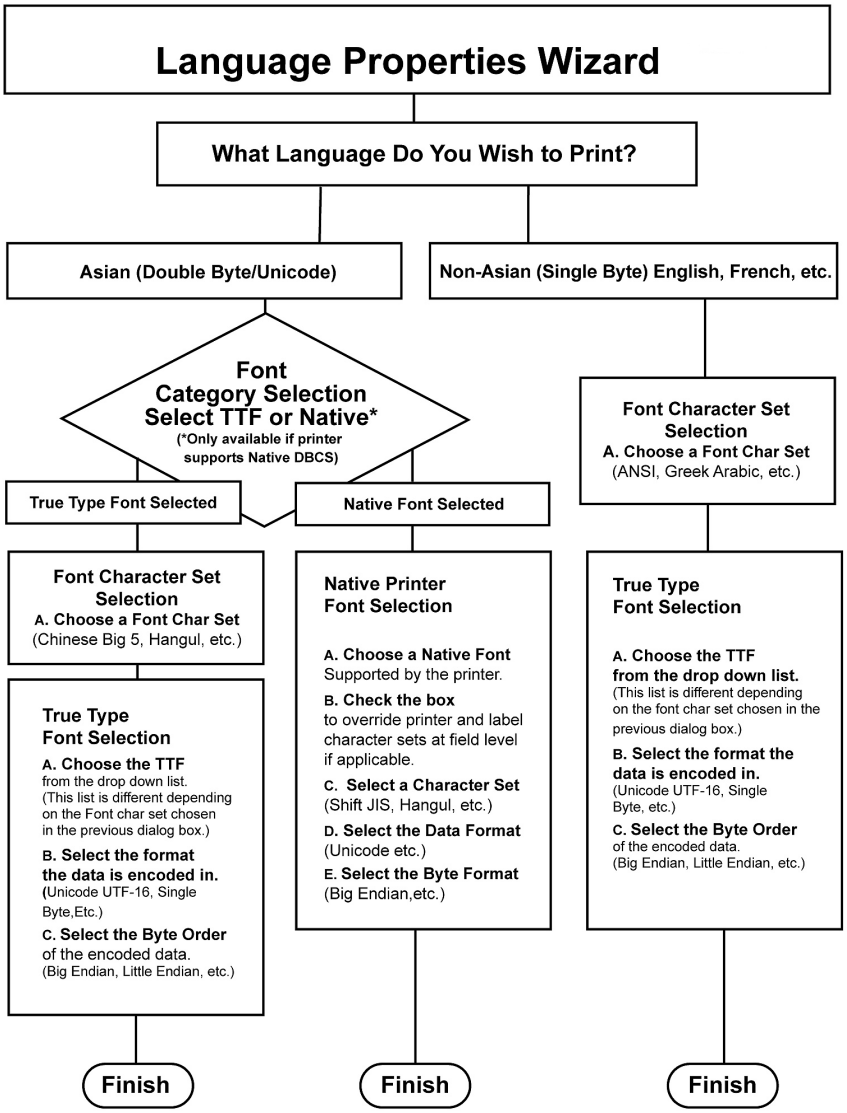
IBM ASCII Chart (Extended)

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
128	80	Ç	160	a0	á	192	c0	└	224	e0	α
129	81	ü	161	a1	í	193	c1	┴	225	e1	ß
130	82	é	162	a2	ó	194	c2	┬	226	e2	Γ
131	83	â	163	a3	ú	195	c3	├	227	e3	π
132	84	ä	164	a4	ñ	196	c4	─	228	e4	Σ
133	85	à	165	a5	Ñ	197	c5	┼	229	e5	σ
134	86	å	166	a6	ª	198	c6	╞	230	e6	µ
135	87	ç	167	a7	º	199	c7	╟	231	e7	τ
136	88	ê	168	a8	¿	200	c8	╚	232	e8	Φ
137	89	ë	169	a9	⌐	201	c9	╔	233	e9	Θ
138	8a	è	170	aa	¬	202	ca	╩	234	ea	Ω

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
139	8b	ï	171	ab	½	203	cb	╦	235	eb	δ
140	8c	î	172	ac	¼	204	cc	╠	236	ec	∞
141	8d	ì	173	ad	¡	205	cd	═	237	ed	φ
142	8e	Ä	174	ae	«	206	ce	╬	238	ee	ε
143	8f	Å	175	af	»	207	cf	╧	239	ef	∩
144	90	É	176	b0	░	208	d0	╨	240	f0	≡
145	91	æ	177	b1	▒	209	d1	╤	241	f1	±
146	92	Æ	178	b2	▓	210	d2	╥	242	f2	≥
147	93	ô	179	b3	│	211	d3	╙	243	f3	≤
148	94	ö	180	b4	┤	212	d4	╘	244	f4	⌠
149	95	ò	181	b5	╡	213	d5	╒	245	f5	⌡
150	96	û	182	b6	╢	214	d6	╓	246	f6	÷
151	97	ù	183	b7	╖	215	d7	╫	247	f7	≈
152	98	ÿ	184	b8	╕	216	d8	╪	248	f8	°
153	99	Ö	185	b9	╣	217	d9	┘	249	f9	∙
154	9a	Ü	186	ba	║	218	da	┌	250	fa	·
155	9b	¢	187	bb	╗	219	db	█	251	fb	√
156	9c	£	188	bc	╝	220	dc	▄	252	fc	ⁿ

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
157	9d	¥	189	bd	┘	221	dd	▌	253	fd	²
158	9e	₧	190	be	┘	222	de	▌	254	fe	■
159	9f	ƒ	191	bf	┐	223	df	▪	255	ff	

Language Properties Wizard Flowchart


Language Properties Wizard
What Language Do You Wish to Print?
Asian (Double Byte/Unicode)
Non-Asian (Single Byte) English, French, etc.
Font Category Selection Select TTF or Native*
(*Only available if printer supports Native DBCS)
True Type Font Selected
Native Font Selected
Font Character Set Selection
A. Choose a Font Char Set
(ANSI, Greek Arabic, etc.)
Font Character Set Selection
A. Choose a Font Char Set
(Chinese Big 5, Hangul, etc.)
Native Printer Font Selection
A. Choose a Native Font Supported by the printer.
B. Check the box to override printer and label character sets at field level if applicable.
C. Select a Character Set (Shift JIS, Hangul, etc.)
D. Select the Data Format (Unicode etc.)
E. Select the Byte Format (Big Endian,etc.)
True Type Font Selection
A. Choose the TTF from the drop down list. (This list is different depending on the font char set chosen in the previous dialog box.)
B. Select the format the data is encoded in. (Unicode UTF-16, Single Byte, etc.)
C. Select the Byte Order of the encoded data. (Big Endian, Little Endian, etc.)
True Type Font Selection
A. Choose the TTF from the drop down list. (This list is different depending on the font char set chosen in the previous dialog box.)
B. Select the format the data is encoded in. (Unicode UTF-16, Single Byte,Etc.)
C. Select the Byte Order of the encoded data. (Big Endian, Little Endian, etc.)
Finish
Finish
Finish

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Sharing Windows Printer Configuration Across LPS Versions

In versions 9.5 or later, Windows printers can be configured from the Loftware Label Manager Device Configuration grid. Before Version 9.5, Windows printers could not be configured within Loftware. Clicking on a Windows printer's **Options** button from the LLM Device Configuration grid would direct you to the Windows Control Panel's Printer dialog.

> **Note:** If you are working in an environment with multiple LPS installations and versions, be aware that sharing LLM / LPS version 9.5 or later Windows printer configuration files with a pre-9.5 version will wipe out any Windows printer configuration settings made in Version 9.5. Windows printer settings made in 9.5 or later are not supported in pre-9.5 versions. Refer to *Sharing Windows Printer Configuration Across LPS Versions* in the Upgrade and Import section of the Loftware Print Server and Label Manager Installation Guide for a best-practice solution.

This problem can occur when the sequence of LLM / LPS usage is Version 9.5 to Version pre-9.5, back to Version 9.5, or upgrade, downgrade, upgrade. When you configure a Windows printer in Version 9.5 or later and then open the printer grid in LLM / LPS Version pre-9.5, the Windows printer configuration settings you had set in Version 9.5 are lost. When you re-open the Windows PSO dialog in Version 9.5, you will have to re-configure the printer.

To work around this problem, back up 9.5 printr32.cfg and printr32.ini printer configuration files so that they can be restored when needed, as demonstrated below:

1. In Version 9.5 and later, configure your Windows printer options (from its PSO page) to the desired settings.

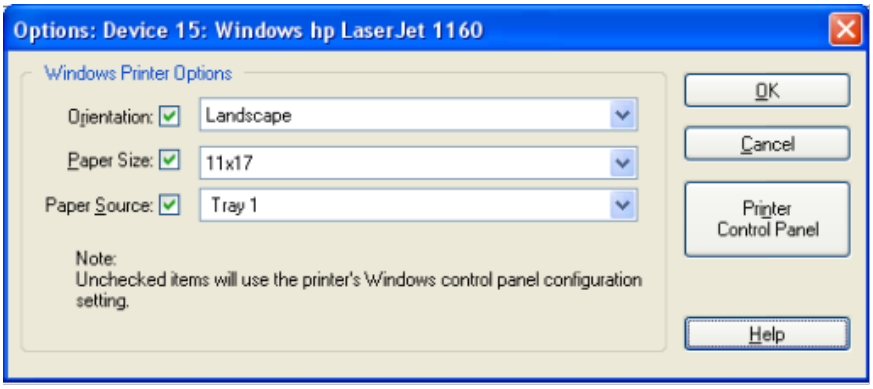

Figure 16.1: Printer Specific Option Window

2. Click **OK**.
3. Go to the Loftware Labeling folder in Windows Explorer. Sort the list on Date Modified.

> **Note:** The printr32.cfg and the printr32.ini files had just been updated.

4. Back up these files – copy and paste them to another folder, for example, \9.5 Win_Printer Config Files.

The next time you switch back and forth between 9.5 and a pre-9.5 version, simply copy the backed up 9.5 printr32.cfg and the printr32.ini files to the 9.5 Loftware Labeling folder.

Note: Windows printer configuration settings that you select from a label's options page (LSO) in Version 9.5 are not affected by version switch-overs. Any of the Windows LSOs configured in 9.5 will not have an effect in versions before 9.5.

Importing and Converting Labels

Loftware Label Manager gives you the flexibility of importing:

- LLM-DOS label formats including label specific options (LSO's)
- Printer specific data streams for Intermec IPL, Monarch MPCL, Zebra ZPL

Converting Printer Specific Hardware Data Streams

Hardware data streams for specific printer types (Intermec IPL, Monarch MPCL and Zebra ZPL) can be accurately imported directly into the Loftware Label Manager designer and merged to any supported printer type by using the File | Import menu option.

Alternatively, you can perform a mass convert of these data files by creating an icon or running the Loftware Label Manager designer with a special command line argument using these switches:

Switch	Description
-e	Printer Type Data Extension
.LAB	(LLM-DOS label formats)
.FMT	(Intermec IPL data streams)
.HDF	(Monarch MPCL data streams)
.ZPL	(Zebra ZPL data streams)
-c	Originating Directory
.rad	Radley...Raduform

64-bit Windows Example

```
"C:\Program Files (x86)\Loftware Labeling\LLMWDN32.EXE" -e.zpl -cc:\zebra\labels
```

When converting hardware specific data streams, you are asked to select the target printer and resolution.

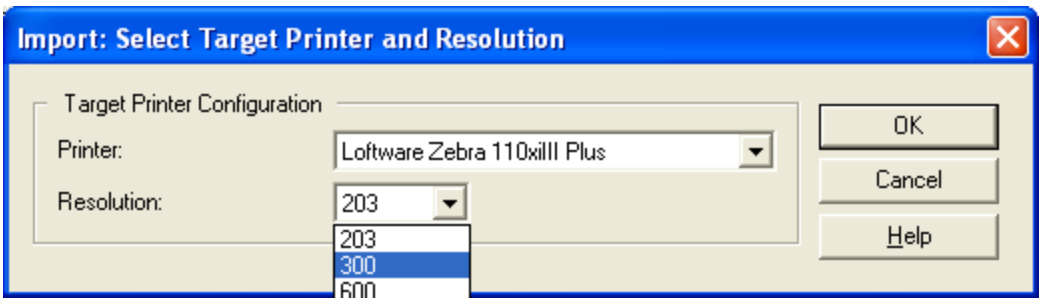

Figure 16.2: Selecting the Target Printer and Resolution

Note: Loftware Label Manager does not convert graphical images embedded into these hardware data streams. An exception to this is the importing of LLM-DOS labels.

Conversion Log

There is a file called CONVERT.LOG located in the labels subdirectory of Loftware Label Manager. It contains a history of all the labels that have been imported along with any associated error messages. This is a flat file edited with any text editor such as Notepad or Edit. This file may contain important information regarding certain aspects of your label that may not have come forward in the conversion process.

Testing Converted Labels

You must test and possibly modify all of your converted labels before you go into production with Loftware Label Manager. Do not delete your LLM-DOS directory until you are confident that your system is working to specification.

Recovering from Import Errors

Generally, the importer uses a best-guess approach to decide how to default a field with an error. For example, if your DOS label contains a Code 11 barcode, an error is logged and the field defaults to Code 39. You may then load the label into Loftware Label Manager and make any necessary adjustments. This method works for most import errors.

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Note: You must purchase and license LPS to use the Loftware Print Server.

The following tables list various messages that the LPS posts to the Application Event Log. The log can be accessed from the Start menu: Start | Programs | Administrative Tools | Event Viewer. LPS entries are listed in the Application log.

Note: Many of these messages are only visible if Event Logging is enabled in the Logging section of the LPS Configuration Utility.

You can also refer to the different log files generated by the Loftware Label Manager or the Loftware Print Server. Much of the information in these files is informational and lists a history of application tasks on the machine.

Example

```
[02 Mar 2007, 07:03:47] This user has the required permissions to launch and access
the Batch Print OLE Server.
```

ID#	Loftware Message	Explanation
100	The <name> service was installed.	
101	The <name> service was removed.	
102	The <name> service could not be removed.	
103	The control handler could not be installed.	Occurs during service startup, possible cause: low resources
104	The initialization process failed.	Failure during service startup
105	The service was started.	Date and time of service start
106	The service received an unsupported request.	
108	The service was stopped.	Date and time of service stop
109	Found and processed Command File: <name>	Command file passed.
110	Passed Batch File: <name> to Batch Print	Named file passed. This is logged if Log Jobs is enabled in LPS Configuration Utility
111	Passed Pas File:<name> to Batch Print	Named file passed. This is logged if Log Jobs is enabled in LPS Configuration Utility
112	Batch Print has issued Job Number: <number>	Batch Print assigns a job number to each job passed to it if Job Numbers is enabled in LPS Configuration Utility

ID#	Loftware Message	Explanation
113	User <name> has modified the configuration settings for the Loftware Print Server.	Named user has modified settings in LPS Configuration Utility
114	Failed to create scan thread due to low memory resources.	System could not allocate the requested resources to create a thread.Check resources, correct, reboot, and retry.
115	Failed to create scan thread.	Failure on startup; reboot (power off) and retry.
116	Failed to initialize the OLE libraries.	Error initializing OLE libraries (dlls); usually caused by a [separate] install that incorrectly overwrites one of the OLE DLLs.
117	Failed to connect to Batch Print.	Most common reason is either incorrect Key (there is a Loftware key on the computer, but it is NOT a Loftware Print Server key) or invalid default DCOM permissions.
119	Failed to remove file <name>.	
120	File <name> already exists! Renamed to <name> before call to BatchPrint.	
121	Cannot rename/move file <name>, file does not exist.	Most likely caused by passing an invalid batch filename in a command file or by a user/process deleting a pass file after dropping but before processing.
122	Invalid directory/Cannot create for <name>, Dir name: <name>.	If the 'OLEBP' directory does not exist off the scan folder, an attempt is made to create it. Invalid access rights to the path or an incorrect scan path can cause it to fail.
123	Cannot determine path to ConfigPrinters.	Usually occurs when there are no printers configured. From LLM, configure a printer and then restart the LPS.
124	File <name> does not exist.	Caused by dropping a command file before dropping the batch file (.bch). In this case, the command file is renamed to *.cme
125	Warning, Loftware Print Server is configured to run in Demo Mode.	There is no hardware key on system.
126	Call to Remote Batch Print generated an exception!	Contact Loftware.
127	Passed Csv File: <name> to Batch Print	Named file passed. This is logged if Log Jobs is enabled in LPS Configuration Utility
128	The polling directory '<name>' is inaccessible.	Polling requires read, write and delete permissions to the folder.
129	Loftware Print Server detected another running instance of LPS.	An attempt to start LPS interactively when LPS service is already running
130	Failed to create poll thread..	Failure on startup; reboot and retry.

ID#	Loftware Message	Explanation
131	Failed to create poll thread due to low memory resources.	System could not allocate the requested resources to create a thread. Check resources, correct, reboot, and retry.
132	Cannot access <name>.	Possible causes include invalid access rights to the resource or that the named resource does not exist.
133	<name> thread reset due to thread failure.	Thread failure
134	Loftware Print Server reset due to severe failure.	LPS reset
135	Failed to create Sock Server thread.	Thread failure
136	Failed to create Sock Server thread due to low memory resources.	System could not allocate the requested resources to create a thread.
137	Failed to create DGram Server thread.	Thread failure
138	Failed to create DGram Server thread due to low memory resources.	System could not allocate the requested resources to create a thread.
139	Failed to set Worker Thread Affinity Mask of <name>	Bit mask indicating thread
140	Unable to obtain UNC equivalent for <name>. Must be shared as LOFTWARE$	Possible causes: UNCPath is not properly configured, the path to the Labels, Layout and WDDrop directories is not set up to share to the network. Refer to KB article# 2009147 on the Loftware Knowledge Base.
141	Failed to connect to Batch Print. (Attempt # <number>)	Possible causes can include out of client seats.
142	Batch Print reset for Memory Threshold.	LPS reset
143	Batch Print reset for Memory not using Threshold.	LPS reset
144	Batch Print reset for remote print fail.	LPS reset
145	Batch Print reset for remote print exception.	LPS reset
146	Batch Print reset due to configuration change.	LPS reset
147	Batch Print reset initing	LPS reset

ID#	Loftware Message	Explanation
148	Batch Print reset on reset event.	LPS reset
149	Invalid key detected. Loftware Print Server requires an LPS key.	Loftware Print Server requires an LPS key.
150	Passed Xml File: <name> to Batch Print	Named file passed. This is logged if Log Jobs is enabled in LPS Configuration Utility
151	The Loftware Print Server is shutting down due to a key failure detected by Batch Print!	Hardware key problem
152	The Loftware Print Server has shut down due to a key change detected by Batch Print!	If any changes were made to the hardware key configuration, LPS must be restarted in order for the changes to be recognized.
153	A General Error has occurred:	Contact Loftware.
154	The Loftware Print Server failed to initialize due to a key failure detected by Batch Print!	Hardware key problem
155	The Loftware Print Server failed to initialize due to a key change detected by Batch Print!	If any changes were made to the hardware key configuration, LPS must be stopped and then restarted in order for the changes to be recognized.
158	This version of LPS has not been successfully installed!	Reinstall LPS.
159	The use of clustering is not authorized for this install. Contact Loftware Sales for upgrade information.	Contact Loftware Sales for upgrade information.
160	A Fatal Socket error has occurred (Error <name>).	Verify connection parameters.
161	Failed to create Direct Sock thread due to low memory resources.	System could not allocate the requested resources to create a thread.
162	Failed to create the Direct Sock thread.	Thread failure
171	Batch Print key failure. Recovery successful. Attempts: <number>, NodeType: <name>	LPS has recovered after initial key failure.

ID#	Loftware Message	Explanation
172	Batch Print key failure. Retrying. Attempt: <number>, NodeType: <name>	LPS is trying to recover from key failure.
173	Batch Print key failure. Recovery failed. Attempts: <number>, NodeType: <name>	LPS key failure.
174	LPS is currently running in Emergency Mode. There are <number> Day(s) remaining.	Displays Emergency Mode after a key or password failure. Contact Loftware.
175	The LPS was told to shut down by <name> for the following reason:<text>.	Troubleshoot reason for shutdown
176	LPS is currently running in Backup Mode. There are <number> Day(s) remaining.	Displays number of days left that LPS will run in Backup Mode. Contact Loftware.
177	There are <number> day(s) remaining on this LPS license.	Displays number of days left on a temporary LPS license. Contact Loftware.
178	LPS is currently running in Backup Mode.	
179	Loftware Print Server Purge Start.	Start of purge operation
180	Loftware Print Server Purge Complete. Purge Duration: <time length>, Jobs Purged: <number>.	Info on completed purge

ID#	Web Listener Message
600	The Loftware Web Listener Main Thread Failed To Create!
601	The Loftware Web Listener Started!
602	The Loftware Web Listener Stopped!
603	The Loftware Web Listener Failed to Send a Keep Alive!
604	The Loftware Web Listener Logged In!
605	The Loftware Web Listener Logged Out!
607	The Loftware Web Listener Failed to Start!
608	The Loftware Web Listener Failed to Stop!

ID#	Web Listener Message
609	The Loftware Web Listener Failed due to an Unknown Error!
610	The Loftware Web Listener Failed to Login!
611	The Loftware Web Listener Failed to Logout!
612	The Loftware Web Listener Lost Connection!
613	The Loftware Web Listener Re-Logged In!
614	The Loftware Web Listener has Detected a Configuration Change! Restarting Threads...
615	The Loftware Web Listener was Denied Login by the Servlet!
616	The Loftware Web Listener Disconnected due to a response from the Web Server!
617	Printer Thread Number Failed To Connect!
618	The Loftware Web Listener is Not Properly Configured!
619	The Loftware Web Listener Failed To Start As A Service!
620	The Loftware Web Listener Failed to Create the Printer Threads. Please Verify that at Least One Printer is Currently Configured.
621	The Loftware Web Listener Failed to Start because WinInet is Enabled! You may NOT use WinInet while trying to run the Loftware Web Listener as a Service.
622	The Loftware Web Listener Failed to retrieve the Print Stream due to the Main Thread being disconnected!

ID#	Loftware Notification Agent Message
400	The <name> service was installed.
401	The <name> service was removed.
402	The <name> service could not be removed.
403	The control handler could not be installed.
404	The initialization process failed.
405	The service was started.
406	The service received an unsupported request.
408	The service was stopped.
409	User <name> has modified the configuration settings for Loftware Agent Service.
410	There was an error connecting/logging in to the Loftware Print Server '<name>'.
411	Loftware Notification Agent Logon to Server '<name>' is not authorized.
412	Agent Logon to Server '<name>' is authorized, but remote logon is not.
413	Memory Allocation error.

ID#	Loftware Notification Agent Message
414	There are no configured recipients, please configure Loftware Notification Agent before starting!
415	This version of the Loftware Notification Agent has not been successfully installed! Please rerun setup.
418	Failed to initialize socket libraries!
424	Loftware has detected that Hotmail is the default mail client. User interaction is required with Hotmail which will cause the Notification Agent to lock up. Email Notifications have been disabled for this session. Avoid using Hotmail as a mail client with the LNA.
425	Loftware has detected that Eudora is the default mail client. Eudora cannot be reliably run from the Loftware Notification Agent Service. Email Notifications have been disabled for this session. Avoid using Eudora as a mail client with the LNA.

Other common messages shown in the LPS Status Client or written to log files include:

LPS Status Client or Log File Messages	Explanation
Label not designed for selected device <devicenumber>	Labels designed for one printer may not work for a printer from a different family or is a different model number within the same printer family. See Knowledge Base Article 2009021.
Error opening port	There are many possible causes for this error, but the most common cause is that a driver is already using the same port that Loftware is trying to use.
Failed to open specified Label Format <format>	Reasons could be that the label format does not exist in the specified path, that one of the files needed for the LPS to print a label is missing, that the LPS user does not have access to the directory specified under Options | File Locations. See Knowledge Base Articles 2009229 and 2009230.
Selected Device Not Configured	This may occur when LPS tries to send a job to a printer that has not been set up in the LLM Device Configuration. It may also recur if the LPS does not have permission to use. See Knowledge Base Article 2009053.
Device Down <device>	
No servers were found on the network	This usually occurs when attempting to run the On-Demand Print Client without having first starting the Loftware Print Server. See Knowledge Base Article 2009244.
Printer is busy	If you are receiving this error when your printer is clearly not busy, it is most likely due to a connection problem.

LPS Status Client or Log File Messages	Explanation
Invalid Device Name <name> used	No printer is configured using the alias specified in the job.
Could not determine/locate the device number (*PRINTERNUMBER or *PRINTERNAME)!	Printer name or printer number is not specified in the pas file.
Could not determine/locate the label format (*FORMAT)!	Label name is not specified in the pas file.